POWER TO STOP GIVES FREEDOM TO SPEED

See Advert. Page 2

MODERN TRANSPORT

"THE TIMES" OF THE TRANSPORT WORLD

ELECTRONIC LONDON BUS OPERATING CONTROL

See Page 3

VOL. LXXVIII No. 2023 [*Registered at the G.P.O. as a newspaper*] LONDON, JANUARY 4, 1958 PRICE NINEPENCE

CURRENT TOPICS

New Year Honours

ALTHOUGH the two lists of honours approved by Her Majesty the Queen to mark the New Year and her official birthday show no signs of contracting it is nonetheless the case that transport and industries associated with it figure less prominently than formerly. The names announced on Wednesday will be recorded in more detail in a subsequent issue, but we would meanwhile mention with particular pleasure the conferment of a Companionship of Honour upon Viscount Nuffield, the knighthood for Mr. Gerard d'Erlanger, chairman of the British Overseas Airways Corporation, and the K.B.E. for Mr. N. A. Gass, chairman of the British Petroleum Co., Limited. Other appointments in the Order of the British Empire include those of Mr. E. H. Ball, managing director of the British Thomson-Houston Co., Limited, and Mr. Keith Granville, commercial director, B.O.A.C., as commanders, and Messrs. R. Brandon, the Midland "Red" traffic manager, and R. Dell, the London Transport signal engineer, as officers. They are accompanied in the list by Mr. E. V. Dolby, the air mail adviser to B.E.A. and B.O.A.C., whose work is of a kind which rarely receives much publicity. Among bankers and industrialists honoured are Mr. Kenneth Murray, lately chairman of the Royal Bank of Scotland, who is a director of Glyn Mills and Co., Limited, and is to be knighted, Mr. A. S. Ward, president, Thomas W. Ward, Limited, who is also to be knighted, and Mr. W. J. Worboys, a director of Imperial Chemical Industries, Limited, who is to receive his knighthood as chairman of the Council of Industrial Design.

Locomotive Manning

WITH the prospective elimination from British Railways of the steam locomotive anxious thought has been given to the manning of alternative forms of motive power. Absence of the physical work of firing and gauge watching nullifies the need for a second man in the cabs of diesel and electric locomotives, wherein the deadman's handle or treadle ensures brake application and the train being brought to a standstill in emergency; only the physical strain and perhaps what might be called, for want of a better word, the boredom of long non-stop running would seem to justify an assistant driver. There are already numerous multiple-unit electric and diesel trains operated by one man as well as some 700 diesel shunting locomotives. After 19 months of negotiation an arrangement has been reached between the unions concerned and the British Transport Commission; it is a tribute to commonsense and patience. The agreement announced just before Christmas provides that passenger trains will have one man at the controls except when they travel without stopping for more than 100 miles or for more than two hours. Multiple-unit trains envisaged for the future, making non-stop runs over 100 miles (or two hours), may thus have an assistant driver in the cab. On stopping trains a driver will not be required to work alone for more than 200 miles or six hours in one turn of duty. There will be similar arrangements for freight trains when vacuum-braked throughout, except that the distance limits are to be 75 miles non-stop and 150 otherwise. There are to be two men in the driver's cab on trains running between 12 midnight and 6 a.m., although there may be exceptions when the train ends its run between midnight and 1 a.m. or starts it between 5 a.m. and 6 a.m. Light engines will also be double-manned, but often with a guard or shunter. Steam heating equipment may also involve double-manning.

Effect on the Plan

A STANDING joint committee representative of the railways and the unions will deal with points of interpretation of the agreement, of which more details appear on page 5. The implications of the agreement are far-reaching. The modernisation plan is aimed to secure a considerable increase in the tempo of British Railways. Apart from its programme of main-line electrification between Euston, Manchester and Liverpool, between Kings Cross, Leeds and York, and between London, Margate and Dover, the plan provides for electrification of many of the intense urban and suburban services in the major centres of population and the provision of faster and more frequent diesel suburban and interurban train services where electrification cannot be carried out, together with re-casting of the feeder and secondary line services with the aid of diesel or electric units. New timetables, designed to exploit the capacity of diesel and electric trains to cover large mileages without attention, will reduce operating costs while providing greater frequency of service. Similar considerations will govern the vacuum-braked freight services. Now duty rosters can be compiled in the spirit of the new regime. Some 2,500 main-line diesel locomotives were budgeted for in the original plan, but now electrification extensions may supersede dieselisation. It is hoped that in four years' time some 200 new diesel locomotives and 200 new electric locomotives will be introduced each year. But the start of all this will be gradual and the redundancy arrangements are designed to hurt as few as possible of the 38,000 drivers and motormen, 33,000 firemen and assistant drivers, and 12,000 cleaners. There may have to be compensation to some men, but by controlled recruitment and allowing ordinary wastage to take its course the effects will be mitigated. The agreement, said Sir Brian Robertson, is a positive contribution to the success of the modernisation plan and to the greater productivity and ultimate solvency of the railways.

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Industrial Peace at the Ports

THERE have been many conjectures as to the fate of the report on the Dock Labour scheme submitted many months ago by a committee under the chairmanship of Mr. Justice Devlin and reviewed in our issue of August 4, 1956. News about it was given in the House of Commons just before Christmas by Mr. Iain Macleod, Minister of Labour. Replying to a question he reminded the house that the committee made two recommendations — first that the existing structure of the scheme, involving joint control by employers and workers, should be preserved and, second, that the National Dock Labour Board might be given the opportunity to exert a greater degree of leadership in dealing with the various problems of dock labour. He said that after discussing the main recommendations with all interests concerned he had decided that the structure of the scheme should remain unchanged. All parties had accepted this decision and both sides of the industry had given him an assurance of wholehearted co-operation in operating it "in the spirit which such a form of partnership demands." On the second recommendation he had decided in the interests of the development of the work of the National Joint Council for the Port Transport Industry that the functions of the Board should not be extended, and the Board will continue as at present. Asked whether the public could now hope that a modern attitude on both sides would produce increasing efficiency, the Minister replied that from both sides of the industry he had received the "warmest response" to his appeal that the scheme should be worked in the fullest sense of partnership. There had been as long a period of peace as most people could remember in dockland; he hoped that would go on.

Railko Comes of Age

FROM the first engine packings plaited by Harry Gordon Small in a cellar in Oldham Street, Manchester, in 1881 have been developed the range of Don brake linings produced by Small and Parkes, Limited, from 1916 onwards and Railko rolling mill and general engineering bearings, which were first introduced in 1936 and came into production in 1937. Railko engineering bearings were developed from brake linings of the type used for transport vehicles and came into being as a material having high resilience under shock loading and abrasion resistance which would have some frictional control on the bogies of railway locomotives. During 21 years of development, Railko bearings and laminates have been widely adopted for use in applications involving extremely heavy pressures, high temperatures and difficult lubrication, such as in steel-rolling mills, marine stern-tube bushings, railway axle bearings, calender rolls and the like; the range of materials has been steadily widened to embrace a present score of different specifications of reinforcing fabric and resin bond to meet specific requirements. The Railko department of Small and Parkes was acquired early in 1957 by the Birfield Group, which has marked the coming of age with two publications entitled *New Economy in Roller Mill Bearings* and *Railko Engineering Bearings and Laminates*. Both are available from Railko, Limited, Loudwater, High Wycombe, Bucks.

U.S. View of British Road Congestion

ADDRESSING the House of Commons All Party Roads Study Group, Professor John Hugh Jones, who is spending a year as Professor in Highway Engineering and Traffic Studies, King's College, Newcastle, University of Durham, related road conditions in Britain to those which he has studied in the United States as Assistant Professor of Civil Engineering, University of California, and Assistant Research Engineer, Institute of Transportation and Traffic Engineering. Urban congestion was so severe that it was essential that there should be immediate improvement in the management of street traffic and at the same time work must go ahead on the long-range solution involving a system of urban motorways. Such motorways in Los Angeles carried three times the volume of traffic at twice the speed in comparison with the ordinary roads, while the accident rate was but one-fifth. The professor urged very strongly the need for an impartial engineering investigation of the highway deficiencies of Great Britain.

Transport Principles Recognised

TWO principles for long enunciated and insisted upon by transport users in this country have at length been accepted by the European Conference of Ministers of Transport, a standing body which meets regularly in Paris. These are known as the two freedoms—freedom to the user to choose the form of transport and freedom to use his own vehicles for his own goods or "transport for own account," as it is known on the Continent. The decision is gratifying to the International Chamber of Commerce, and particularly to the British National Committee of the Chamber, whose general transport committee some years ago set the ball rolling by initiating certain principles, already recognized in Britain, for international observance. Opposition to any future tampering with these principles is thus materially strengthened. At the same meeting Ministers were called upon to report on the practical measures to be adopted to meet the financial situation of railways and they stressed the importance of the economic organisation and development of transport as a whole. In this latter connection the meeting had regard to the significance of transport in connection with the nascent European Common Market and free trade area. Amongst other things it recommended the setting up of an international pallet pool in which the largest possible number of railways and transport users should participate; the international unions covering railways and road transport are to examine the possibility of including in such a pool road transport enterprises. The Ministers approved the conclusions of their deputies on the report of a committee on the co-ordination of investment in transport which seeks to develop transport in the light of economic needs.

A Traders' Transport Leader

NO one perhaps has done more to instil into the minds of civil servants and industrialists at home and abroad a proper appreciation of the significance of transport than has Mr. A. G. Marsden, whose impending retirement from the post of transport adviser to Unilever, Limited, is dealt with elsewhere in this issue. Once aptly described as a transport ambassador, he has a particular flair for influencing politicians, as well as for organising transport functions and staff, early witness to which was his inauguration between the wars of the railhead depot system of distribution. In the Ministry of Food he put transport "on the map" and, with the Ministry's backing, persuaded recalcitrant food divisions to "toe the line," so enabling one Ministry at least to match its transport demands to limited wartime availability. His postwar position with the great Unilever combine afforded opportunity for the application of similar methods and principles, not only in his immediate occupational sphere but in the wider industrial field here and on the Continent. In this work he had several willing helpers, to whom he would be the first to pay tribute for a good deal of the success obtained in fairly universal recognition of the rights of the transport user and of the advantages of regular carrier-user consultation. It is good to learn that he is not at once severing all connection with commercial and industrial transport and that for a time he will retain his international contacts and commitments. Transport users in his own circle and far beyond it owe a good deal to his persistent advocacy.

POWER TO STOP
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GIVES FREEDOM TO SPEED
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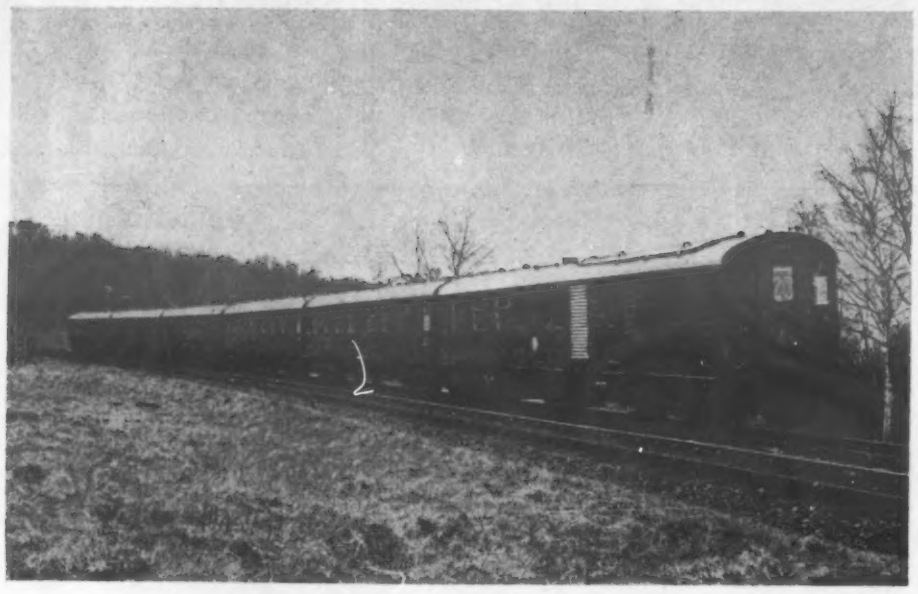

One of the multiple-unit 1,000 h.p. diesel-electric vestibule sets for the Hastings via Tunbridge Wells line, built by the Ashford and Eastleigh Carriage Works of the Southern Region.

Planned to cover the 62-mile journey between London and Hastings in ninety minutes, these new fast passenger trains are equipped with the brake which gives powerful and flexible control in all conditions of service and emergency–the brake which is now being used extensively on the Southern Region electric stock–

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The Editor is prepared to consider contributions offered for publication in MODERN TRANSPORT, but intending contributors should first study the length and style of articles appearing in the paper and satisfy themselves that the topic with which they propose to deal is relevant to editorial requirements. In controversial subjects relating to all aspects of transport and traffic this newspaper offers a platform for independent comment and debate, its object being to encourage the provision of all forms of transport in the best interests of the community.

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Putting Off the Evil Day

WHEN the report of Coras Iompair Eireann for the year ended March 31, 1957, was drafted, that of the committee of inquiry into Irish internal transport presided over by Dr. J. P. Beddy had been presented to the Government but no decisions had been announced upon future policy. In point of fact it required some six months from the time of the report's publication for a policy to emerge and that is an uncommonly long time when the vigorous Mr. Sean Lemass, Minister for Industry and Commerce, is concerned in anything. The report of C.I.E. showed an increased loss of £1,723,209, compared with £1,625,542 for the previous year, but it should be added that the loss included a £1,471,700 provision for depreciation and that the capital account included renewals and replacements totalling some £982,000. It is plain that, while the modernisation of railway equipment has brought about some economies, these cannot effect a complete change in circumstances. Despite rising costs a saving of more than £300,000 was achieved on the railway fuel bill, while almost £80,000 was saved on rolling stock maintenance. This is obviously encouraging; nevertheless it must be recorded that the number of passengers declined by 7 per cent, despite all the new equipment. However, the passenger receipts increased by £105,000.

The Branch Line Case

DIMINUTION in passenger traffic is attributed by C.I.E. to the poor summer weather in 1956, the continued growth in the number of private cars and the development of self-drive car hire facilities; the decrease occurred despite fuel rationing which prevailed for the last three months of the financial year. It will be recalled that the Beddy Committee proposed to achieve reduction of the loss on railway operation in part by the drastic closing of secondary railways and the elimination of uneconomic stations on the main lines (MODERN TRANSPORT, May 25, 1957). This solution has not been favoured by the Eireann Government which preferred to accept the estimate of the C.I.E. board that although 22 branch and secondary lines were, taken by themselves, losing £100,000 annually, they were contributing £800,000 worth of traffic each year to the system as a whole. This contribution does indeed represent a substantial proportion of the £6,711,000 railway traffic revenue. It is probable also that consequential savings from abandoning some of the branch lines would prove, as they have done in Britain, to be considerably above the estimated figures. The problem of the Irish towns with their cattle fairs is difficult of solution and it could be argued that retention of the branch lines for freight traffic is justifiable as being inherently less costly than the provision of a fleet of cattle lorries which would be moved about the country from fair to fair. It has been argued by Irish economists that some of these fairs themselves have really outlived their usefulness, but politicians hesitate to risk voicing such an argument. Any rationalisation would be fraught with difficulties in a country with agriculture as its main industry. The Government proposes to leave responsibility for deciding on the maintenance of branch line services with C.I.E. and contemplates payment of an annual subsidy for five years to enable the undertaking to set its house in order while avoiding a further increase in charges—both Government and operator consider these to have reached the point at which returns would diminish steeply if any rise took place.

Scope for Economies

READING the latest annual report, it is obvious that the potential economies offered by the full-scale adoption of diesel traction have yet to be realised. The number of diesel locomotives rose during the year from 43 to 84, but the total of steam units fell only from 327 to 292. Even if some of these were in store it was a large stock to carry. When moreover the statistical tables are considered it is found that while steam locomotive mileage decreased from 7,781,892 to 4,221,781 and diesel locomotive mileage rose from 650,114 to 3,882,157 there was also a decline in the diesel railcar mileage from 1,906,075 to 1,684,184. Turning to train-miles per train-engine-hour, the steam coaching figure fell from 16.66 to 12.44 and the diesel railcar figure from 31.76 to 27.6, while the diesel locomotive figure was almost unchanged at 31.11. In freight train working the steam locomotives averaged 10.17 (10.81) train-miles per train-engine-hour and the diesels 16.62 (17.97), but somewhat more encouraging was the fact that ton-miles per train-engine-hour rose from 695 to 751 and wagon-miles per hour from 253.05 to 312.50 per train-engine-hour.

Too Large a Staff

THERE are, however, other aspects of the operations of Coras Iompair Eireann which represent a drain on its resources. Its canals are a problem in themselves. The Royal Canal is virtually out of use and the Grand Canal traffic shows little signs of developing. The fact that receipts rose by just over £1,000 to £136,942 was due to a whole year under the increased charges introduced in February, 1956, and there was also a saving of more than £2,500 on maintenance costs. All in all the loss in working was reduced from £65,122 to £59,625. The Beddy Committee favoured the cessation of C.I.E. barge traffic, but the Government has not accepted that recommendation in view of the observations on the proposal by the board of C.I.E. It may be that such suspension of facilities would result in diversion of traffic not to the railways or even to the undertaking's road services but to the merchant lorry owner or private canal carrier. If to the last-mentioned, then the canal dues would at any rate be forthcoming. It is, however, necessary to ask whether the undertaking as a whole is justified in maintaining more than 450 miles of canal and moving on the sections now in use some 80,000 tons of traffic annually if it is going to lose more than £50,000 a year in the process. This is a call on financial resources which can be pinpointed, but the cost of overstaffing is an aspect which is obvious in general terms but very hard to remedy. In the background, moreover, looms the prospect of the absorption by C.I.E. next autumn of the staff of the Great Northern Railway Board within the Republic of Ireland. This is an added complication for which the Government, or at least the one in Dublin, cannot be blamed, but it will mean that there will be some 14,000 railway workers in all to be taken into account. An estimate that 30 per cent of the C.I.E. workers were really redundant has since been denied by Mr. Lemass, but it would not be unreasonable to put the figure at 20 per cent and that is alarming enough in a country beset with the twin problems of unemployment and emigration. Efforts are being made to find other employment for the G.N.R.B. works at Dundalk, but it seems probable that the labour problem has been the strongest influence upon the Government decision to encourage retention of the railways.

An Opportunity Lost

VIEWED overall this can, with the best will in the world, be described only as an endeavour to put off the evil day. The chances of the railway section of C.I.E. regaining anything approaching financial equilibrium, or even the stage when what is lost on the railways and canals is recouped by the buses, lorries and hotels, are remote if nothing is to be done to remodel the staffing position and problematic even if it were done. The present situation can be of little real help to anyone. Steps are to be taken against illegal haulage competition and they may well have some effect. The view of the C.I.E. board that further restrictions should be placed upon private haulage was unconvincing to the Beddy Committee and is equally so to the Eireann Government. It may be added that the licensed hauliers are even more fervent than the large undertaking in wishing for the suppression of illegal operations. The small men have, moreover, gained Government recognition of their need for increased scope of operation if railway services are curtailed. This is some help (if not very tangible) for those of them working on narrow margins. It would have been better in the long run for Irish transport if the opportunity had been taken to reach some firmer policy decisions. The day of reckoning has merely been deferred for a quinquennium.

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Forthcoming Events

January 6.—Institute of Transport (Metropolitan). Paper by Mr. A. Samuels, "Traffic Congestion in Big Cities." At 80 Portland Place, W.1. 6 p.m.
Institute of Transport (Darlington). Paper by Mr. E. Dalton, "Transport in Nigeria." At United House, Grange Road, Darlington. 7 p.m
Institute of Transport (East Anglia). Paper by Mr. C. S. Dunbar, "The Problem of Passenger Transport in Small Towns and Rural Districts." At Eastern Counties Omnibus Co., Limited, 79 Thorpe Road, Norwich. 6 p.m.
January 7.—Institute of Transport (Midland). Paper by Mr. Charles F. Klapper, "European Transport." At Exchange and Engineering Centre, Birmingham. 6.30 p.m.
Institute of Transport (West Middlesex). Paper by Mr. F. H. Keenlyside, "Sea Transport." At Control Tower Building, London Airport Central. 6.15 p.m.
South Wales and Mon. Railways and Docks Lecture and Debating Society. Paper by Mr. J. Freeguard, "B.R.S. First Decade—What Next?" At Angel Hotel, Cardiff. 6 p.m.
Institution of Civil Engineers. Paper by Messrs. C. Peel, A. J. Carmichael and R. F. J. Smeardon, "No. 1 Berth, Tilbury Dock." At Great George Street, S.W.1. 5.30 p.m.
January 8.—Institute of Transport (Southern). Paper by Mr. A. G. Taylor, "The Oil Industry in Relation to Transport." At Harbour Board Offices, Southampton. 5.45 p.m.
Permanent Way Institution (London). Paper by Mr. E. C. Cookson, "Heavy Plant." At 222 Marylebone Road. N.W.1. 5.45 p.m.
Institution of Railway Signal Engineers (York). Paper by Mr. R. F. Dean, "The Work and Problems of a District Lineman." At Signalling School, Toft Green, York. 5.30 p.m.
January 9.—Railway Students' Association and B.R. (L.M.R.) Lecture and Debating Society. Debate. At Euston. 6.15 p.m.
Institution of Naval Architects. Amos Ayre Lecture by Mr. J. Ramsay Gebbie, "Evolution of the Cargo Ship during the last 35 years and Thoughts on Years to Come." At 10 Upper Belgrave Street, S.W.1. 4.45 p.m.
January 10.—Institute of Transport (Northern). Paper by Major-Gen. G. N. Russell, "Transport in Modern Times." At Royal Station Hotel, Newcastle upon Tyne. 7 p.m.
January 11.—Railway and Canal Historical Society. Paper by Mr. Charles F. Klapper, "The Mid-Kent Line." At the L.T.E. Library, 55 Broadway, S.W.1. 6 for 6.30 p.m.

LONDON BUS OPERATING CONTROL

Electronic Aid Gives Instant Route Picture

NEW WEAPON TO COMBAT IRREGULAR RUNNING

NOW undergoing field test on route 74, the "bus electronic scanning indicator" developed by London Transport as a means of securing overall intelligence of the operations on a bus route is, as was noted in editorial reference last week, the most advanced apparatus of its kind anywhere in the world. The device, referred to shortly as B.E.S.I., provides a complete visual indication, by means of code numbers in illuminated lamps, of the approximate whereabouts of every bus on the route at all times, each bus being identified by its running number. Mr. T. S. Pick, chief electrical engineer of London Transport, was responsible for design and development, working in close association with Mr. J. B. Burnell, operating manager (Central Road Services).

It will be appreciated that the main difficulty in operating a regular bus service through the congested streets of a city is the lack of knowledge where individual buses are at any instant of time, and whether any acute congestion has built up in any particular area.

Moreover, to be of maximum value to the operating staff, it is desirable that any individual bus can be traced by its running number. A variety of schemes has been tried out, including magnetic scanning and local radio intercommunication, but bearing in mind the cost involved to cover the whole of the London Transport area, a simple optical system has finally been chosen. The cost of equipping a control centre and sufficient buses for the 60 or so routes penetrating Central London is roughly estimated at £80,000. Such a scheme would probably not include trolleybus routes, but with the first deliveries of RM-class buses due this year, replacement of trolleybuses by buses should commence in 1959.

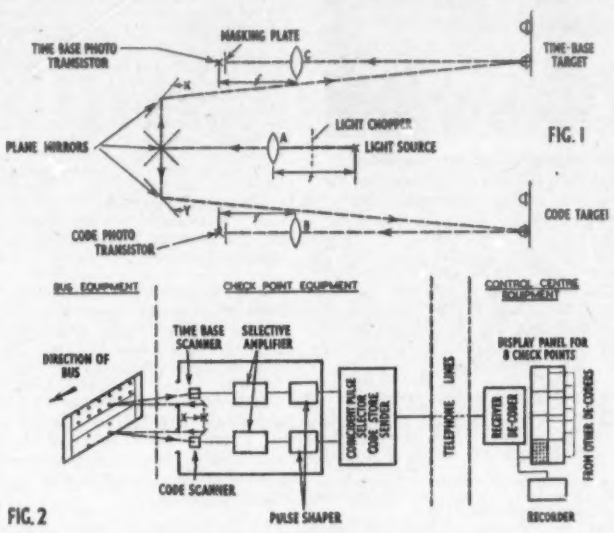


FIG. 1

FIG. 2

Schematic arrangement of electronic device for bus route control with (above) optical paths in a scanner

Visual Indication

The scheme which is now in process of development consists of a number of check points on a route each of which, by electronic equipment, reads the number of each bus as it passes the point and transmits it over telephone wires to a central location, where it is displayed on a panel and finally will be recorded on a chart. When each bus passes the next check point the number will be recorded on another panel and cancelled on the first, so that in effect each panel will contain the running number of every bus between the two boundary check points.

Numerically, the largest item would be the equipment necessary on each of the buses, and for this reason this item has been designed so as to be as cheap as possible. Financially, the largest obstacle could be the telephone cables to the scanning points; fortunately, however, London Transport has a very widespread private telephone network, particularly on its railway system. There may be occasional points which can only be dealt with economically by the hiring of G.P.O. lines; the equipment must, therefore, be designed so as not to interfere with other telephone users. Some of the other more important factors that had to be considered in the design of the system were as follows:

(*a*) The equipment must be designed to facilitate quick and easy route and running number changes.
(*b*) The bus equipment in no circumstances to interfere with the ordinary functioning of the bus, or its crew.
(*c*) The roadside equipment easily installed and maintained.
(*d*) The system capable of being operated by day and by night, over a range of bus speeds from 0 to 30 m.p.h.

Bus route 74 runs (on weekdays) between Camden Town and Putney Heath (Telegraph Inn), skirting the West End on a route which takes in Portman Square, Marble Arch, Park Lane and Hyde Park Corner. There are turning points in regular use at Baker Street Station, West Brompton (Empress Hall) and Putney Heath (Green Man), which is the Sunday terminus.

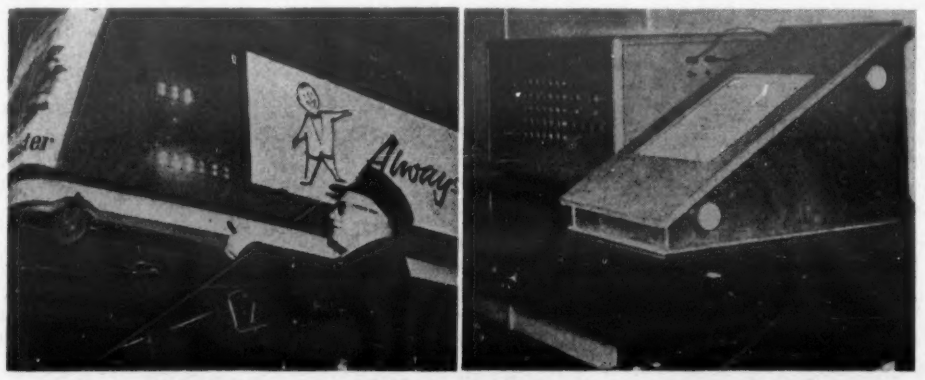
Three garages, Putney Bridge (F), Putney (Chelverton Road) (AF), and Chalk Farm (CF), between them provide 30 buses for the route. The garage running numbers have been rearranged in a continuous sequence from 1 to 30 for the experiment. Each bus has been fitted on the front nearside upper deck panel with two 12-in. long metal plates, slid into clips, bearing combinations of six pairs of ¾-in. dia. glass "cats eyes," similar to those used in road signs. Each bus running number has been coded into a binary number and this is reproduced on the plate, which contains reflectors for each digit and a corresponding blank for each zero. The six positions represent respectively the numbers 1, 2, 4, 8, 16 and 32 and in the illustration below the bus is actually F7 (1+2+4). A total of 63 numbers is thus provided for. One further set of reflectors brings this to 127 and it would therefore be a simple matter to accommodate a large number of buses on various routes provided their running numbers were rearranged so as not to conflict.

There were several problems to be overcome in designing the plate to be mounted on the bus. Firstly there was the difficulty of recording buses travelling at any speed between 0 and 30 m.p.h.; secondly, the variation in the height of the reflectors, due to the loading of the bus, and, thirdly, the variation of angle of the reflectors from the vertical due to the position of the bus on the camber of the road as it passes the scanner. Added to the above was the requirement that the plates must be of reasonable size, not only for handling purposes—as they are changed every time a bus alters its running number—but also because there is little space on the bus not already occupied by destination blinds, advertising spaces and windows. Moreover, the plates must be placed at a height well above the level of pedestrians on the pavement and, maybe, cars parked at the kerb.

Target Plates

To compensate for varying speeds, the bus plate is produced in two parts, the lower half being a complete row of reflectors to form a timing base—plus one additional one at the end to act as a clear down unit. The upper half is placed 10 in. above, and exactly in line vertically as the binary code plate. The horizontal spacing between each reflector is 2 in., which has been found satisfactory for timing purposes up to at least 40 miles per hour, leaving a reasonable margin for normal bus operation. The type of reflector used has a very narrow reflecting field and negligible scatter. To compensate for both loading and camber, the reflectors are mounted in pairs, one above the other, at 1-in. centres. (In the diagram reproduced above the code target and time base are shown in reversed positions.)

In an earlier experiment, involving buses from one of the garages working route 105, between Shepherds Bush and Hayes Station, white stripes formed of reflective material on a black background were used for the marker, but this was not deemed sufficiently durable.



The reflector plate as mounted on a bus (running code shown is 7); the control panel and, in the foreground, roller-band timetable for use by route controller

Scanner Unit

The scanner unit must be mounted so that the buses pass within about 12 ft. of it, as above this distance the angular displacement of the light becomes increasingly difficult to accommodate. In addition, if the spacing from the kerb becomes too great, there is the danger of a parked lorry completely masking the scanner. Sites chosen, therefore, are places where the road is narrow, or its width restricted due to a pedestrian island. The scanner unit itself may need to be pole mounted and this must be made as small and light as possible. The relays and other circuit equipment must then be mounted at suitable positions as near as possible, either by space within a building or, if necessary, in a street box mounted on the pavement.

The scanner must be designed to reject all signals other than those contained in the reflectors, particularly the gold lettering and other reflecting vertical lines often seen on trade vehicles. It must work in bright sunlight as well as on dark nights—it is also hoped that it will operate so long as the buses themselves can be operated in a fog.

A light source consisting of a 12-volt, 36-watt lamp is focused by lenses and passed through slots

(*Continued on page 9*)

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under
arduous
conditions

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LORRY—BUS—COACH

Glasgow Area Independent Sells Out

THE 30-year-old Glasgow independent bus company of Lowland Motorways, Limited, has been sold to Scottish Omnibuses, Limited, "for a very considerable sum." Negotiations have proceeded for two years on the sale of the firm, which carried 8 million passengers last year on its seven stage services in the East End of Glasgow and holds the B.E.A. contract for passenger transport between St. Enoch air terminal and Renfrew Airport. The Lowland company at present owns some 45-50 buses and coaches, including seven ex-London Transport A.E.C. Regents and the two experimental turbocharged rear-engined Leyland double-deckers with independent front suspension. The 200 employees have been offered employment with Scottish Omnibuses, but it is unlikely that the vehicles will become a part of the S.M.T. fleet. It is reported that formal notice of dismissal to employees from Lowland takes effect from January 12.

Lowland Motorways was responsible for a Glasgow—Aberdeen express service, transferred to W. Alexander in 1935, and a Glasgow—Manchester service acquired by Ribble. Thereafter the company concentrated on excursions, tours and private hire until its local bus services were commenced in recent years.

Second L.T.E. Wage Reply

NEXT Wednesday, January 8, has been fixed by London Transport for its reply to the renewed wage claim put forward by the T.G.W.U. for bus workers. It is understood that at the meeting on December 23 in which the 25s. per week claim was put forward a second time, the union put forward the following justification:

1. The further rise of one point in the retail price index, since rejection of the original claim.
2. Wage increases in outside industries, particularly in brewing, biscuit making and the retail and wholesale Co-operative Societies.

Enforcement at Work in Scotland

ANOTHER heavy series of fines for Road Traffic Act offences has been recorded in Scotland. John Stewart (Larbert), Limited, was fined a total of £80 at Falkirk Sheriff Court on December 23 on four charges. The company pleaded guilty to (1) on 61 occasions, between May 1 and July 31, 1957, using a vehicle for the carriage of goods for hire or reward while not holding a carrier's licence; (2) on 81 occasions between the same dates using a lorry for the carriage of goods without holding a licence; (3) that being the holder of an A-licence, and a B-licence in respect of six vehicles, all authorised for the carriage of goods, on 251 occasions it failed to keep current records; and (4) on 17 dates caused and permitted drivers in its employment to drive the vehicles for more than 5½ hours continuously.

Picturesque Nationalisation Day

JANUARY 1, the day on which the Ceylon Government nationalised the bus services, was treated as a day of national rejoicing. At a special ceremony in the grounds of the House of Representatives on that day, the Prime Minister, Mr. Bandaranaike, formally declared that the State had taken over the bus services. Thereafter, the Prime Minister, the Minister of Transport, Mr. Senanayake, v.i.p.s and representatives of the bus travelling public took the first ride on a state bus. Similarly in every constituency in the island special ceremonies marked the takeover. Special buses carrying Members of Parliament and distinguished residents of the area left from 87 bus headquarters all over the island.

Christmas Spent on Coach Tour

TWO days before Christmas 70 travellers left Derby, Nottingham and Loughborough on a special Christmas tour for the New Forest and Bournemouth organised by the Trent Motor Traction Co., Limited, the first it had operated of this nature. The first coach, which was decorated in traditional Christmas style, was met by Father Christmas at Nottingham and the passengers in this and the other coach were presented with gifts from the company. All this was part of a spectacular send-off for the Christmas revellers who boarded the coaches assured of a fully inclusive five-day programme of Christmas fare and festivities.

A 60-seat Guy Arab coach used by a Belgian operator on an Ostend—Amsterdam international route jointly with vehicles of a Netherlands owner; right, a Leyland Royal Tiger Worldmaster 32-seater of New Zealand Luxury Landlines. Each seat has its own light, ventilator and drinking water and there is a kitchen and toilet at the rear

Yorkshire Air Feeder Service Grant

APPEALS lodged by seven area bus companies and the B.T.C. against the grant to Wallace Arnold Tours, Limited, of a road service licence in respect of an express service between Leeds and Ringway Airport (Manchester), feeding B.E.A. services, have been dismissed by the Minister of Transport.

Cape Bus Merger Approved

SHAREHOLDERS of Golden Arrow Rail Feeder Bus Services, Limited, have unanimously agreed to the proposed sale of the transport-operating subsidiaries to Cape Electric Tramways for a total consideration of £1 million (MODERN TRANSPORT, November 30, 1957). A net profit of £55,571 is disclosed in the accounts of this holding company for the year ended June 30, 1957. This compared with £53,585 for the previous year. The combined profits of the group of companies amounted to £175,796. The board declared the usual dividend of 12½ per cent, together with a bonus dividend of 2½ per cent. The company continues to hold the entire share capital of Golden Arrow Bus Services, Limited, Athlone Trust, Limited, Cape Western Bus Services (Pty.), Limited, and the Cape Bantu Passenger Transport (Pty.), Limited.

B.M.M.O. Lowers Some Fares

IN pursuance of an undertaking given at a joint sitting of the West Midland and East Midland area Traffic Commissioners last September, the Birmingham and Midland Motor Omnibus Co., Limited, has submitted proposals for reductions in fares of 3d. and 3½d.; in fact the company is including some 4d. fares also. The Commissioners asked the company to examine cases where the increase it sought at that time in lower fares would make the new fare unduly high for the mileage involved. B.M.M.O. says that, by applying a yardstick already in use by other operators, 7,939 of the 15,496 fares reviewed should remain unaltered, 3,023 should be increased and 4,534 should be reduced. However the 3,023 fares will not be increased, but the others will be lowered by removing the halfpennies added in the last application. It adds that recasting 1,400 pages of its faretables means a printing bill of approximately £4,500. It regards these concessions as being very much in the nature of an experiment.

Bus and Coach Developments

South Wales Transport Co., Limited, proposes a new service between Llanelly (Queen Victoria Road) and Penyfan (Firth Square). Services between Llanelly and Morfa or Machynis would be modified.

Plymouth Corporation and the Western National Omnibus Co., Limited, apply for a City Centre—Pennycross service via Portland Square, Trelawny Road, and Weston Park Road.

United Service Transport Co., Limited, and Blue Belle Coaching Services, Limited, L. Adnams, Limited, and H. J. Phillips and Sons, Limited, with which it is associated, propose revision of their licences for seasonal express services to effect exchange of feeder services and elimination of others.

From January 8 London Transport Central bus route 254, Loughton—Buckhurst Hill, is to be extended on weekdays to South Woodford Station, via Albert Road, Buckhurst Way, Hillside Avenue, St. Barnabas Road and Maybank Road. Route 73, Stoke Newington—Richmond, will be worked in sections, but still with through journeys.

All Green Line coaches on Service 722 between Aldgate and Upminster are being diverted in Romford to run via Dagenham Road, Oldchurch Road and South Street instead of via the eastern section of Rush Green Road.

London Transport is to abandon the experimental Saturday extension to Ongar of Country bus route 381 (Epping—Tootnill) which was introduced last October.

London Transport and the Thames Valley Traction Co., Limited, are combining to serve the L.C.C. estate at Britwell,

(*Continued at foot of next column*)

PUBLICATIONS RECEIVED

BAKELITE EPOXIDE RESINS. The latest series of leaflets issued by Bakelite, Limited, 12-18 Grosvenor Gardens, London, S.W.1, describing the properties and recommended applications of the company's range of epoxide resins.

T.I. METALS IN WORLD TRANSPORT. An excellent new booklet by Tube Investments, Limited, The Adelphi, London, W.C.2, which describes and illustrates the comprehensive products and services offered by its subsidiary companies—Accles and Pollock, Metal Sections, Pel and T.I. Aluminium—to the transport industry.

CANADA—INDUSTRIAL OPPORTUNITY. A most useful booklet published by the Department of Industrial Development, Canadian Pacific Railway Company, Trafalgar Square, London, W.C.2, describing how this department of C.P.R. can be of assistance to British and European enterprises by the provision of accurate up-to-date information on Canadian industrial affairs.

NORAL PRODUCTS—TABLES OF WEIGHTS.—This useful booklet, recently brought up to date, provides a ready source of information on the weights of many of the aluminium products—sheet, corrugated sheet, plate, circles, bar, tubes and wire—manufactured by Northern Aluminium Co., Limited. It is thumb-indexed and is designed for wall-mounting where required.

THE A.B.C. OF RAW MATERIALS. The latest publication of the Port of Bristol Authority, copies of which can be obtained free by firms connected with the shipment of raw materials, from the General Manager's Office, Queen Square, Bristol, 1. Arranged alphabetically, the book deals comprehensively with the modern facilities offered by the port, backed by many interesting illustrations.

TIN RESEARCH (1932-1957). A booklet by Dr. E. S. Hedges, director of the Tin Research Institute, commemorating the first 25 years of the International Tin Research Council's existence. It reviews the growth of the organisation, the changes which were necessary during the war years, and the development since the war, and concludes with a short synopsis of some of the new uses of tin which have resulted from the work of the Institute. The booklet, which is well illustrated, is available free from the Tin Research Institute, Fraser Road, Perivale, Greenford, Middlesex, or from the Institute's overseas offices.

PRIDE IN PROGRESS. Oil refining has grown swiftly to its present status among Britain's industries. In 1946, the United Kingdom's refining capacity was under three million tons, since when the oil companies have spent over £220 million in enlarging existing refineries and in building new ones in Britain, to increase capacity tenfold. The Shell, British Petroleum and Eagle Groups, for two-thirds of Britain's refinery output. In this little booklet, Shell-Mex and B.P., Limited, which draws its supplies from the refineries of these groups for distribution to its customers, traces the growth of each refinery of Shell-Mex and B.P.'s parent companies.

The Chaseside Loadmaster mobile loading shovel, which incorporates a torque-converter transmission and has been sold extensively overseas, is now available for the first time on the home market.

The Minnesota Mining and Manufacturing Co., Limited, has introduced a non-slip floor coating, named Safety Walk, which is available in strips, rolls and cleats and is easily affixed to all types of floor or deck surface.

A midget oscilloscope, weighing less than 8 lb. and measuring only 10½ in. long, has been designed by Kelvin and Hughes, Limited, for use by the company's service engineers for examination of echo sounding equipment in a ship without taking components ashore.

Work is now in progress on a new plant for the production of an important aviation petrol blending component at the Stanlow (Cheshire) refinery of Shell Co., Limited. Costing £800,000 and designed by Universal Oil Products Company, this new Udex unit of the solvent extraction type is expected to be in operation by mid-1958. It will use as feedstock the products from the nearby £3½ million Platformer unit completed in 1953.

(*Continued from previous column*)

Slough. The former has extended journeys on 484, 484A and 484B every 40 min. from Farnham Road to the junction of Monksfield Way and Doddsfield Road. The Thames Valley service (64) follows the same routes as London Transport to Long Readings Lane and then proceeds to the other end of Monksfield Way. Frequency is 40 min.

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DIESEL AND ELECTRIC LOCOMOTIVES

Details of Manning Agreement Between B.T.C. and Trade Unions

ONE MAN IN CAB ON MANY TRAINS

DETAILS are now available of the agreement (referred to in our December 28 issue) which has now been ratified by the British Transport Commission, the Associated Society of Locomotive Engineers and Firemen, and the National Union of Railwaymen for the manning of diesel and electric locomotives on British Railways. Broadly the terms of the agreement provide, as from January 1, 1958, for the manning of diesel and electric locomotives by one driver or motorman only, subject to maximum distances or periods as listed and to certain exceptions between midnight and 6 a.m.

Passenger Trains, including Multiple-Unit Trains

Single-manning will apply where the scheduled non-stop distance or non-stop running time does not exceed 100 miles or two hours. Diagrammed duties will provide for the aggregate of scheduled train running single-manned to be limited to not more than 200 miles or six hours per turn of duty.

Fast Freight Trains

On freight trains fully fitted with the vacuum brake single-manning will apply where the scheduled non-stop distance or non-stop running time does not exceed 75 miles or two hours. Diagrammed duties will provide for the aggregate of scheduled train running single-manned to be limited to not more than 150 miles or six hours per turn of duty.

Manning During Night Hours

Between the hours of 12 midnight and 6 a.m. double-manning, i.e. two men in the cab, will apply to trains scheduled to run during this period with the exception of trains scheduled to finish between midnight and 1 a.m. and trains scheduled to commence between 5 a.m. and 6 a.m., which will be single-manned subject to certain conditions.

The new arrangements will be introduced gradually as the new types of motive power become available and progress will be kept under review between the railway management and the trade unions.

Other Provisions

Among other details of the agreement it may be mentioned that where single-manning is in force there will be a rostered break between the third and fifth hours of duty of 30 min. for physical needs. The rostering of drivers to drive single-manned will not imply any obligation to couple or uncouple. On passenger trains a second man may be required to attend to steam heating apparatus and this is provided for in the agreement.

When running light diesel and electric locomotives will be double-manned by men in the line of promotion, except as in (*b*) and (*c*) below:

(*a*) On running lines between motive power depots and traffic yards and passenger stations, double-manning will apply, the second man to be in the line of promotion for footplate grades.

(*b*) On or across running lines where the movement is within local limits double-manning will apply but the second man may be a man in the footplate line of promotion, or a guard or a shunter.

(*c*) On goods lines connecting one group of sidings at a traffic yard with another group, not signalled in accordance with absolute block regulations, double-manning will apply, but the second man may be a man in the footplate line of promotion, or a guard or a shunter.

Headquarters Committee

Where a diagram provides for men to work both passenger and freight trains single-manned within one turn of duty the freight limitations of mileage apply. It is not intended that men should be rostered on turns partially double- and partially single-manned except where night duty or light engine running is involved.

A committee comprising headquarters representatives of British Railways and of the A.S.L.E.and F. and N.U.R. will be appointed to deal with points of interpretation arising from the agreement as well as such matters as proposals in connection with scheduled trains running single-manned where the mileage and/or time involved exceeds the limitation specified; proposals in connection with scheduled trains running single-manned during the night hours where trains are scheduled to finish shortly after 1 a.m. or to commence shortly before 5 a.m.; rosters in excess of 8 hr. on train turns which are single-manned; and questions raised in connection with the manning of locomotives whilst working in dock areas. Any departure from the terms of the agreement would be made by agreement through this committee.

Provisions for Staff

Footplate staff who may become redundant as a result of single-manning will be able to take advantage of the improved redundancy arrangements recently agreed for footplate staff, under which they may be offered another post in their own grade within a reasonable distance of their home. The Commission hopes, however, that the main weight of redundancy will be absorbed by the normal wastage of staff. A man in the footplate line of promotion at the operative date of the agreement who becomes redundant will not be dismissed from the service, except for disciplinary reasons, provided he avails himself of the then current redundancy arrangements in respect of footplate staff. Special arrangements will be made to ensure that staff displaced gain the necessary knowledge and experience of the new forms of traction to enable them to continue in the line of footplate promotion.

A form of compensation for the loss of promotional prospects will be given to established firemen who have not become established drivers after 15 or more years as firemen, by the payment to them of the appropriate driver's rate. Established cleaners at the operative date of the agreement will qualify for the benefit of this arrangement on becoming appointed firemen. The Commission and the trade unions believe that the agreement now reached represents a positive and important step towards greater efficiency and economy on British Railways, and will enhance materially the economic and technical advantages to be derived from the widespread introduction of diesel and electric traction under the modernisation plan.

Sir Brian Robertson's Comment

Sir Brian Robertson, chairman of the British Transport Commission, informed us that the Commission regarded the agreement which has now been reached with the trade unions on the manning of diesel and electric locomotives as a matter of prime importance for the future of the railways. It was a positive contribution to the success of the modernisation plan, and to the greater productivity and ultimate solvency of the railways. "On the other hand it scrupulously respects safety considerations and ensures proper working conditions for the staff involved. The success of the long negotiations is the result of patience and a constructive outlook on both sides. It is, I hope, a good augury for our relations with our staff and with the trade unions in the future."

★

BOOK NOTICES

Trade and Technical

KNOW YOUR CAR. By the staff of *The Autocar*. (London: Iliffe and Sons, Limited, Dorset House, Stamford Street, S.E.1. Price 3s. 6d. net, postage 6d.) The fifth edition of this useful book, which fully warrants its sub-title, "A simple explanation of its mechanism," has been enlarged and extended considerably to include new developments, such as automatic gears, automatic clutch operation and the like, and many of the earlier chapters have been re-written. Specially prepared illustrations are an aid to clear understanding of basic principles involved in motor vehicle mechanisms.

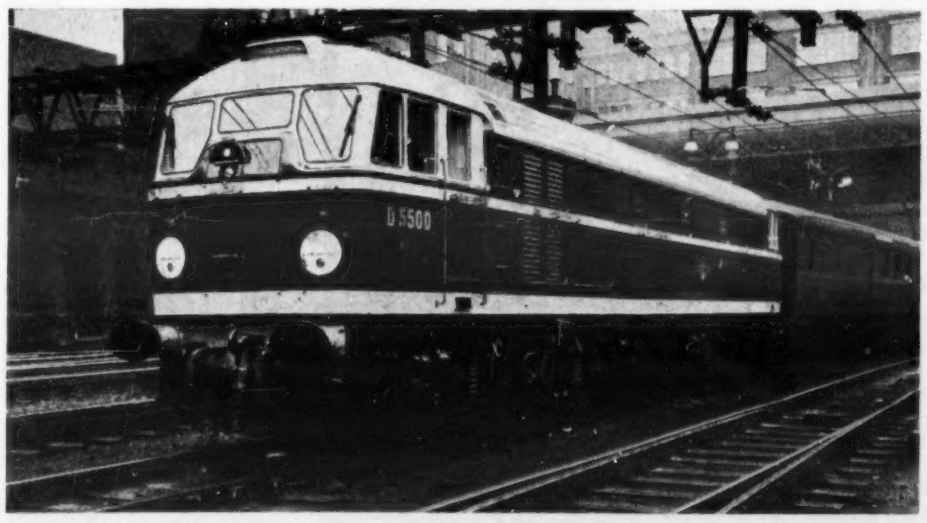
* * *

THE BRITISH COMMERCIAL VEHICLE INDUSTRY. Sixth Edition. (London: Temple Press, Limited, Bowling Green Lane, E.C.1. Price 42s. net.) The new edition of this now well-known valuable reference work appears in a smaller form, more convenient to handle. Covering the products of British makers of commercial vehicle chassis, bodies, components and equipment, the text has been completely revised and the majority of illustrations are new. Indexing and colour-coding are effective in making quick reference possible and maximum utility to overseas readers is assured by the inclusion of French and Spanish specification table headings and captions and metric weights and dimensions.

* * *

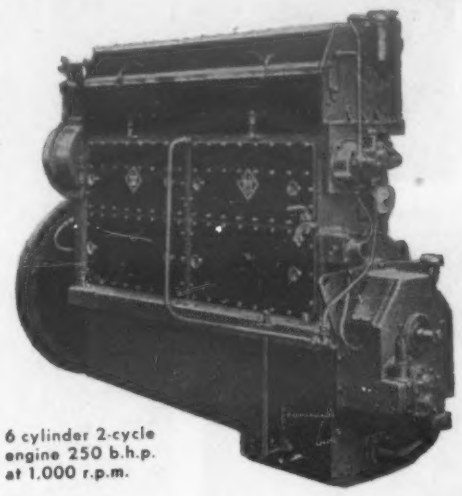
THE COLLAPSE METHOD OF DESIGN AS APPLIED TO SINGLE-BAY FIXED-BASE PORTALS. By F. A. Partridge, B.Sc. (Eng.), A.C.G.I., M.I.C.E., M.I.Struct.E., M.Inst.W. (London: British Constructional Steelwork Association, 94-98 Petty France, S.W.1. Price 2s. 6d.) As B.C.S.A. Technical Publication No. 11, this book forms the second part of a report covering the collapse method of design. The first part, Publication No. 5, dealt with beams and pin-base portals. Since the first part of the report was published, there has been solid advancement in collapse design, which ensures a prescribed margin of strength against failure, and the practical methods now evolving for solutions of the problems affecting single-bay fixed-base portals are described in detail in the present publication.

The Midland divisional offices of the National Benzole Co., Limited, have moved to Herbert House, 61 Cornwall Street, Birmingham, 3. Telephone Birmingham Central 5651-3.



The first of the Eastern Region Brush AIA-AIA 1,250-h.p. diesel-electric locomotives leaving Liverpool Street on a Clacton train; the second of the series headed the 9.54 a.m. from Liverpool Street as far as Cambridge when the official party for the opening of Great Eastern House was on board **(see page 10)**

H&W DIESEL ENGINES
for Locomotives Shunters Railcars



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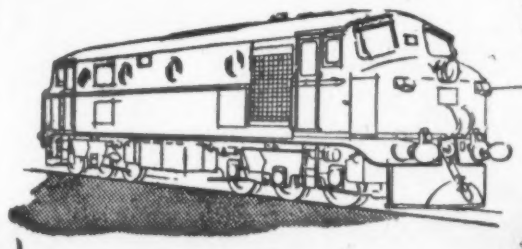
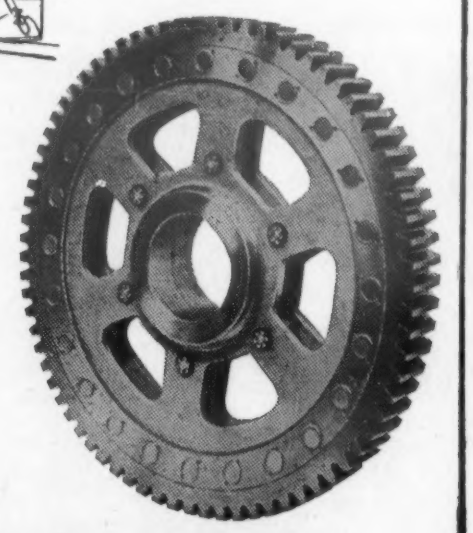


Diesel locomotive built by Messrs. Brush Traction Ltd., for Ceylon incorporating Wiseman resilient gear wheels.



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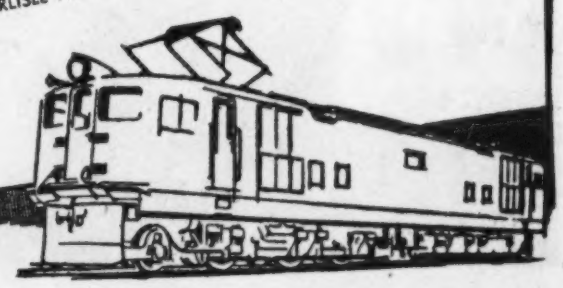
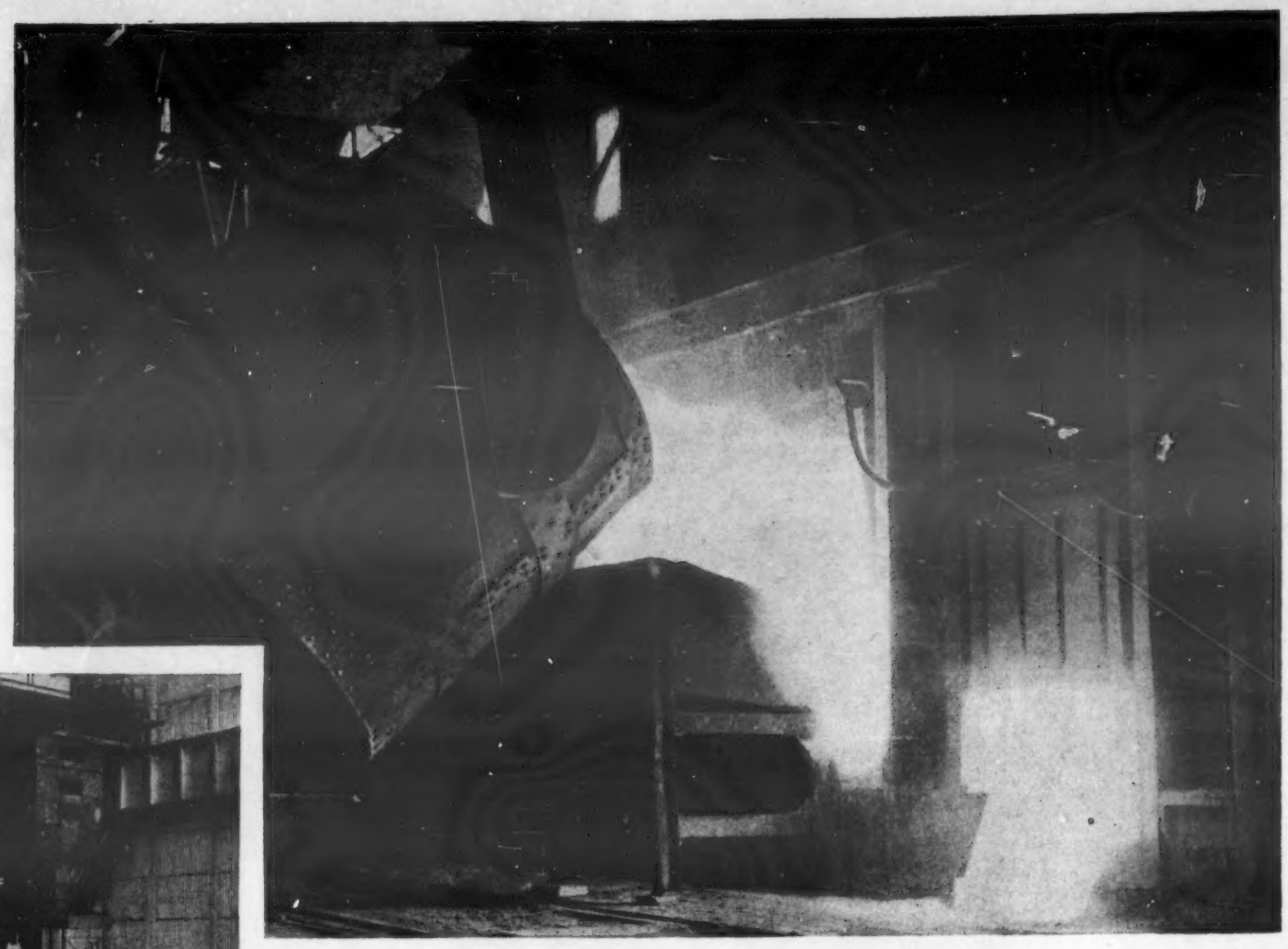
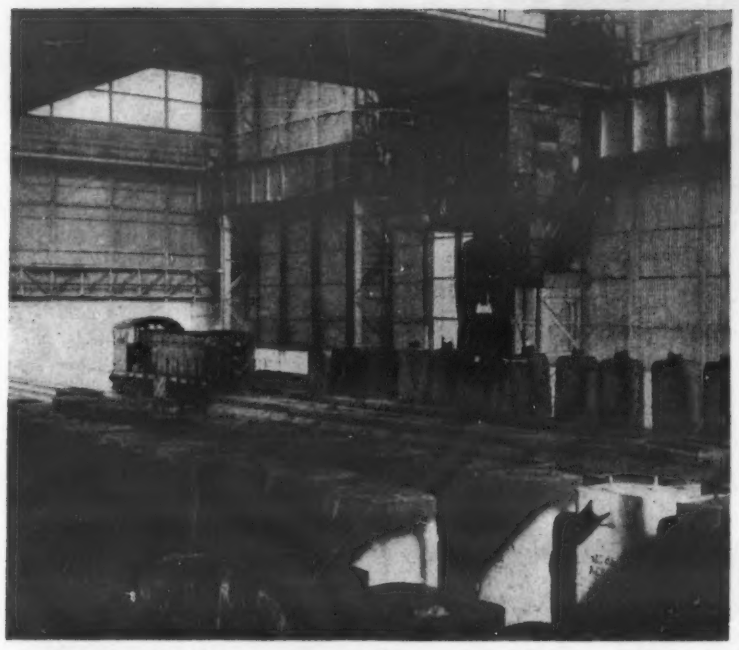


3030 H.P. Electric Locomotives supplied by Messrs. North British Locomotive Co. Ltd. for South African Railways incorporating Wiseman resilient gear wheels.



Molten iron being charged into an open hearth furnace at Abbey Works



The ingot stripper bay at Abbey Works

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The slabbing mill motor room at Abbey Works

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MODERN AIRWAYS and COMMERCIAL AVIATION SECTION

WORLD TRAFFIC GROWS

I.A.T.A. Looks Forward

IMPRESSIVE I.C.A.O. STATISTICS

IT has become the practice for the International Air Transport Association and the International Civil Aviation Organisation to survey the past year and hail the next. Pursuing this custom, Sir William P. Hildred, director-general of I.A.T.A., said recently that international air transport faced a busy and challenging year in 1958. In the same months during which they must carry an expanding traffic, the world's airlines must also prepare for the imminent introduction into service of large numbers of the new turbine-powered air liners.

"Governments willing and general economic conditions permitting, 1958 should be a good year for the world's airlines. Readjustment of general fares and rates levels to reflect the mounting costs of airline operation should, if the traffic keeps up, improve their net earnings position. Meanwhile, the planned introduction of the new 'economy' class over the North Atlantic and the continuation of other, tried and proven promotional fares and rates throughout the world system should help ensure that traffic will keep up. Indeed, there is real hope that the rate of annual increase during 1958 will even exceed the steady 15 per cent rise of past years."

New Travellers

At least several millions of people who had never flown before would thus get their first taste of air travel in 1958. The more experienced user of the airways would also find that their services were better than ever. There would be more non-stop services between many points. Handling passengers and cargo at airports and air terminals would be considerably accelerated and improved by the opening of new facilities and the further elimination of international red tape. Continued modernisation of the present piston-engined fleet would bring a higher proportion of traffic on to four-engined aircraft. More new turboprops would come into service, and the first of the jets should take their place on the flight line before the end of the year.

"These latter aircraft," Sir William said, "will be the heralds of the scores and hundreds which will be coming along in 1959 and 1960 and underline the fact that only a relatively few months remain before the problems of the jet age become critical. In that time, with the help of governments and other international organisations, preparations must be completed to phase these new planes into normal operations all over the globe. Their requirements are many and imposing. They will depend, in even greater measure than today's aircraft, on a system of ground bases and navigation aids which is already complex and which must develop in pace with the new speeds of the flying machine. They will also require a much greater precision of flight planning and operation than we have ever known in order to achieve acceptably economic operation."

Collaboration in Jets

The product of these new aircraft, in terms of both service and price, must be digested by the closely-knit pattern of international air fares, rates and conditions, in such a way that they could exist compatibly with those of present aircraft. No matter how much publicity the jets might get, the equipment already in use would go on giving good service for a long while to come. The airlines were well advanced in their preparations for this new era. The process of pooling information and know-how, and of working out in advance every detail and procedure of jet operation, had been under way on an unprecedented scale for several years past. All airlines and manufacturers, and many governments, air forces and international organisations, had put their best brains and experience into it; and everyone concerned should be ready to start their jet operations with reasonable standards of economy as well as the highest standards of safety.

Another Record In 1957

"Traffic carried by the world's scheduled airlines has reached another record peak in 1957 with a total of 87 million passengers, each carried an average distance of 585 miles (940 km.)," said Mr. Carl Ljunberg, secretary general of the International Civil Aviation Organisation, in issuing the year-end traffic figures. "These figures show the continuing growth and expansion of air transport ever since 1945; if this expansion continues through 1958, we can reasonably expect the airlines next year to carry close to a hundred million passengers, and to have their aircraft spend close to ten million hours in the air."

The total figures for 1957 were too great reasonably to be understood, but they were the equivalent of flying two million people all round the world, or of carrying every man, woman and child in Canada from Montreal to Europe. Twelve years ago the average aeroplane carried 13 passengers at 150 miles (240 km.) per hour; today it was 29 passengers at 200 miles (325 km.) per hour. The new jet air liners would be introduced on the world's air routes in little more than a year's time; when these aircraft became common, they could expect a further large increase in these figures.

REVENUE TRAFFIC 1945—1957 ON SCHEDULED AIR SERVICES

Year	Miles flown	Hours flown	Passengers carried	Passenger-miles	Cargo ton-miles*	Mail ton-miles*	Average number of: Passengers per aircraft	Average number of: Miles flown per passenger	Average number of: Miles flown per hour
				Millions					
1957	1,760	8.8	87	51,000	1,150	300	29	585	200
1956	1,580	8.0	77	44,000	1,030	280	28	575	200
1955	1,430	7.4	68	39,000	910	260	27	570	195
1954	1,290	6.7	58	33,000	770	230	26	565	190
1953	1,190	6.4	51	29,000	720	190	24	560	185
1952	1,100	6.0	46	25,000	680	180	23	545	183
1951	1,010	5.6	42	22,000	640	170	22	520	180
1950	890	5.0	31	17,000	530	140	19	540	177
1949	840	4.8	27	15,000	390	130	18	545	175
1948	790	4.6	24	13,000	290	120	17	550	170
1947	710	4.2	21	12,000	180	90	17	560	165
1946	580	3.8	18	10,000	80	70	17	530	155
1945	370	2.5	9	5,000	70	90	13	545	150
			Annual Increase or Decrease						
Years			*Per cent*						
1956-57	+11	+10	+13	+16	+11	+ 7	+ 4	+2	+2
1955-56	+10	+ 8	+13	+15	+14	+ 8	+ 4	+1	+2
1954-55	+11	+10	+17	+17	+18	+15	+ 4	+1	+2
1953-54	+ 8	+ 5	+12	+13	+ 8	+18	+ 8	+1	+3
1952-53	+ 8	+ 7	+13	+18	+ 5	+ 8	+ 4	+2	+2
1951-52	+ 9	+ 7	+10	+14	+ 8	+ 8	+ 5	+5	+2
1950-51	+13	+12	+35	+25	+21	+20	+16	−4	+2
1949-50	+ 7	+ 4	+15	+17	+35	+ 5	+ 6	−1	+2
1948-49	+ 6	+ 4	+13	+14	+36	+12	+ 6	−1	+2
1947-48	+11	+10	+14	+11	+56	+31	—	−1	+2
1946-47	+21	+11	+17	+19	+125	+30	—	+6	+8
1945-46	+57	+52	+100	+100	+ 9	−23	+31	−3	+4

These figures exclude the U.S.S.R. and the Peoples Republic of China. * Short ton-miles.

Midwinter sunshine greeted Eagle Airways first Vickers Viscount 805, G-APDW, on a recent proving flight to Hamburg. Photographed at Fuhlsbüttel Airport on Christmas Eve the aircraft is due to go into service on the operator's Manchester—Hamburg—Copenhagen route within the next four weeks. It will carry 14 first-class and 45 tourist-class passengers in rearward facing seats

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NEWS FROM ALL QUARTERS

Station Closing

Padeswood and Buckley Station, between Chester and Mold on the London Midland Region, is to be closed on and from January 6.

Ticket Office Mechanisation

Multiprinter ticket printing and issuing machines are being installed in Durham Station on the North Eastern Region and in the modernised ticket office at Chippenham (Western Region). Caerphilly Station has a Flexiprinter machine. These machines are supplied by Westinghouse Garrard Ticket Machines, Limited, of Chippenham.

End of the B.I.F.

Birmingham Chamber of Commerce, which has organised the last remaining section of the British Industries Fair, the annual general heavy industries section at Castle Bromwich, has decided to discontinue it. A referendum held by the Federation of British Industries showed that out of 109 trade associations all but four favoured specialised fairs in preference to general exhibitions.

Transport Featured at Schoolboys' Exhibition

The 31st National Schoolboys' Own Exhibition at the Horticultural Halls, London, was opened by Sir Brian Robertson, chairman of the British Transport Commission, on December 31; the British Transport Commission features a large-scale "Just the Job" display to show youngsters what a transport career can offer. Included is a display of the electronic bus route control system devised by London Transport (see page 3).

Closure of Sevenoaks Tunnel

Train services through Sevenoaks Tunnel will be completely suspended on Sundays in this month to enable engineering work in connection with the modernisation plan to be pressed forward at the greatest speed. Speeds will be restricted through the tunnel between January 14 and 25. While the line is closed steam trains will be diverted and services from Sevenoaks to London termini will be provided only by the normal electric trains. A special bus service will be operated between Sevenoaks and Tonbridge, the affected section of the line, and most train services in the area will be considerably affected.

Waterway Boating Featured

On its stand at the National Boat Show at Olympia until January 11 British Waterways is making a special feature of the many and varied facilities for pleasure cruising on Britain's canals and inland waterways. Photographic displays show general pleasure boating activities and also the three types of vessels that form British Waterways' growing cruising fleet—Heart of England cruisers, *Water*-class hire cruisers and day cruisers for parties; a cut-away model of a hire cruiser is on display; and large coloured maps indicate the widespread routes which are available for pleasure-boat holiday-makers.

Tyne Ferry Tolls Up

Certain tolls for the conveyance of vehicles by the North Shields and South Shields ferry were increased from January 1. For a goods vehicle exceeding three tons unladen the toll is 8s. (includes driver), but for any vehicle whose length (with or without load) exceeds 20 ft. the charge is 9s. 6d.

British Railways Christmas Traffic

Over 223,000 passengers travelled from the principal British Railways London termini on Christmas Eve in 603 long-distance trains. This is more than double the number of Christmas Eve passengers who travelled from London last year, when, however, the incidence of Christmas Day was such that pre-Christmas travel was spread over several days.

Liverpool—Warrington Diesel Service

Two-car diesel trains take over the local services between Liverpool Central and Gateacre, and between Liverpool Central and Warrington on and from January 6. The trains will run at regular hourly intervals to and from Gateacre and similarly to and from Warrington Central, thus providing a half-hourly service in each direction for stations between Liverpool Central and Hunts Cross. This is double the present services between these two points.

Mersey Docks Watching Charges

The Mersey Docks and Harbour Board proposes to introduce a new bye-law under which a master porter may charge each consignee of goods watched by him at a berth, the sum of 2s. 9½d. for each period or part of a period from 8 a.m. to 5 p.m. or from 5 p.m. to 8 a.m. during which the goods of that consignee are watched. Under the existing bye-law a master porter is authorised to recover, in respect of each ship, the sum of 20s. 9d. per watching period in equal proportions from the consignees having a cargo on the quay. This means that a consignee cannot estimate or eventually check the charges incurred for watching. It also complicates the preparation of the accounts and delays their issue.

Work Study in Transport

Many aspects of the nation's work, including activities in the transport industry, will come under review at a special conference to be held by the British Institute of Management at Caxton Hall in London on February 6, when executives engaged in all types of management will meet to discuss up-to-date developments in work study. It is being organised by B.I.M. in association with seven other organisations closely concerned with improved methods and increased productivity. Chairman of the conference will be Mr. Harold Wilmot, chairman and managing director of Beyer, Peacock and Co., Limited, president of the Locomotive and Allied Manufacturers' Association and chairman of the B.I.M. council. Mr. E. R. L. Fitzpayne, general manager of Glasgow Corporation Transport Department, will lead a discussion on the application of work study in his particular field.

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COMMERCIAL AVIATION

Irish Transatlantic Service?

ANGLO-SOVIET AGREEMENT

A TRANSATLANTIC service operated by an Irish airline may be in operation during the coming summer. The president of Seaboard and Western Airlines, Mr. R. Norden, has been in Dublin again for talks with officials of Aer Lingus and with Government representatives. Fianna Fail, the present Government, had planned a service starting on March 17, 1948, but a general election put it out of office and the Coalition Government stopped the plan. In 1953, when Fianna Fail was again in office for a time, negotiations were started up with Seaboard and Western which agreed to operate the transatlantic service on a charter basis, but the U.S. Civil Aeronautics Board would agree to the charter arrangement for a two-year period only. The Irish Government decided not to put the service into operation on that basis. It is understood that Seaboard and Western Airlines would charter three Lockheed Super-Constellations to Aerlinte Eireann and would hold from a fifth to a quarter of the stock in the company. Recently it was announced that Icelandic Airlines (Loftleidir) which is not an I.A.T.A. member, intended to operate a transatlantic service linking Belfast with New York. The talks with Seaboard and Western were apparently speeded up in the light of that announcement.

Tunisia Joins I.C.A.O.

Tunisia recently became the 72nd member state of the International Civil Aviation Organisation, thirty days after its instrument of adherence to the Convention on International Civil Aviation was deposited.

T.W.A. Round-the-World Service

Acting on a recent decision from the U.S. Civil Aeronautics Board, on January 1 Trans World Airlines extended its route beyond its terminus at Colombo, to Bangkok and Manila, where passengers on flights from the United States, the British Isles and other points in Europe transfer to Northwest Orient transpacific flights to the U.S.A. and thus receive a complete round-the-world U.S. flag carrier service.

New Air Cargo Guide

Concise details of air freight services have long appeared in the *A.B.C. World Airways Guide* but it has obviously been impossible to provide in full the information required by freight consignors as regards rates, documentary needs and other matters. The publisher has now decided that the moment is opportune for the appearance of the *A.B.C. Air Cargo Guide* which, judging from its first issue (January), provides all the information omitted from its elder brother. There is a series of helpful tables and advice on such matters as the completion of air waybills which it would do some of the people who consider themselves experts good to read. The new guide is 5s. 6d. monthly.

Long Delivery Flights of EP9s

Four Edgar Percival EP.9 general purpose aircraft recently arrived in Australia after delivery flights from the United Kingdom under their own power. They completed a 14,000-mile trip passing through Europe, the Middle East, Karachi, Calcutta, Rangoon, Singapore and Indonesia. The aircraft, two of which were being delivered to Superspread Aviation, Limited, Melbourne, and the other two to Skyspread Pty., Limited, Sydney, were carrying cargo and passengers. Two of them were carrying assorted cargo which included a racing car engine in each and the other two carried three passengers and two passengers respectively as well as cargo.

In Round Figures

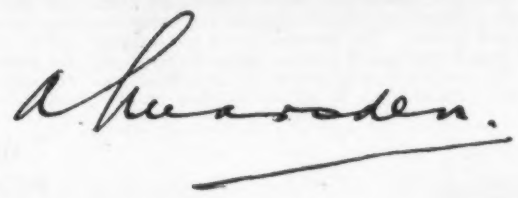
American Airlines announced on Monday that it was the first airline in history to fly more than 5,000,000,000 revenue passenger miles in one year. It had passed the significant figure during the weekend, according to Mr. Charles R. Speers, senior vice president, sales. American Airlines proposes to inaugurate the first nonstop service by a U.S. carrier between Chicago and Mexico City on January 5, with a daily Douglas DC-7 flight in each direction. The aircraft will have first-class accommodation for 32 Mercury passengers in a separate area in the aft of the cabin, and coach seats for 38 Royal Coachman passengers in the front section. Fare for the Mercury service over the nonstop route will be $114 single way, and $216.60 return, while the Royal Coachman fare will be $76 single, $152 return.

Anglo-Soviet Agreement Signed

Meetings before Christmas at the Ministry of Transport and Civil Aviation between representatives of the Union of Soviet Socialist Republics and of the United Kingdom of Great Britain and Northern Ireland ended with the signing of an agreement for establishing reciprocal services by British European Airways and Aeroflot between London and Moscow. The agreement was signed by Mr. David Ormsby-Gore, Minister of State for Foreign Affairs, on behalf of the United Kingdom and by Chief Marshal of Aviation P. F. Zhigarev, on behalf of the U.S.S.R. It will come into effect when both countries are satisfied that the technical and commercial conditions they consider necessary for safe, economic and acceptable operations exist. The matters requiring further study on both sides include aircraft performance and characteristics, navigational and airport facilities, details of routeing required by either country, communications for exchange of meteorological and other necessary information, air-traffic control systems and procedures and commercial arrangements between B.E.A. and Aeroflot. The two countries have agreed to co-operate in order that these matters may be dealt with as quickly and satisfactorily as possible. The exchange of information will begin forthwith and a British technical mission will go to Moscow early this year for study on the spot. A similar Soviet mission to Britain is also planned. The talks, in which the Soviet delegation was led by Chief Marshal of Aviation Zhigarev assisted by Mr. Danilychev and Mr. Vereshchagin, were conducted by the Ministry of Transport and Civil Aviation with the assistance of the Foreign Office and with the help of advisers from B.E.A.

No date has been fixed for the opening of services since this will depend upon the technical and commercial matters still to be settled. The air services agreement is one in principle and is confined to the London—Copenhagen—Moscow route and is terminable by either side at six months' notice. It provides that if, as a result of tests, either country finds the noise level of the aircraft concerned excessive then suitable modifications shall be made to reduce it to an acceptable level before it may be used on the London—Moscow services.

TRANSPORT AND INDUSTRY



Mr. A. G. MARSDEN, C.B.E., M.Inst.T.

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Due to retire in the very near future, Mr. Allen Gatenby Marsden relinquished his post as transport adviser to the board of Unilever Limited, on December 31 and will remain in a consultative capacity until impending retirement date. For many years he has been prominent in the field of commercial and industrial transport at home and abroad. Born in 1893 and educated at Bedford Grammar School, he joined the staff of the London and North Western Railway as a probationer in 1909 and on the outbreak of war in August, 1914, he was commissioned in the 8th Battalion Manchester Regiment, T.F., and later served in Egypt, Cyprus and Gallipoli, whence he was invalided home with the rank of captain. From June, 1916, he served under the Director-General of Transportation, France, until November, 1917, when he was appointed to the Ministry of Food and served as a transport and storage officer at Liverpool and Manchester. In January, 1920, he was transferred to the newly formed Ministry of Transport as a traffic assistant and a year later became transport manager of Cadbury Bros., Limited, Bournville, and subsequently transport adviser, Cadbury-Fry Joint Transport. From this post he was released in December, 1940, to assume the duties of Director of Transport at the Ministry of Food, a position he held until the end of the war, when he accepted his present appointment with Unilever, Limited. Up to the time of his joining the Ministry of Food Mr. Marsden had served as chairman of the transport committee of the Manufacturing Confectioners' Alliance. Since the war he has been chairman of the British General Transport Committee of the International Chamber of Commerce and chairman (until 1957) of the Transport Users' Policy Committee of the Federation of British Industries. He is immediate past-president of the International Commission of Transport Users, is a vice-president of the I.C.C. General Transport Commission and of the International Container Bureau and a council member of the International Road Federation. He is also a representative of commerce and industry on the Central Transport Consultative Committee for Great Britain and a vice-president of the Institute of Transport, to whose proceedings he has made several contributions, receiving in 1949 the British Transport Commission Award for a paper on "Traders and the Transport Act." For his wartime services he was awarded the C.B.E. in the Birthday Honours List, 1945.

ALUMINIUM—TIN

Reticular Structure

CHEAPER PLAIN BEARINGS

COMMENCEMENT of production of a new type of bearing alloy is announced jointly by the Tin Research Institute and Glacier Metal Company, who have been working together for some years on its practical development. The new bearing alloy contains about 20 per cent of tin, the remainder being aluminium hardened with 1 to 3 per cent of copper. The tin constituent has a structure which is reticular within the continuous aluminium matrix, that is to say, the tin has a structure which is itself continuous without disturbing the continuity of the aluminium. Should metal to metal contact occur between a shaft and a bearing with this reticular structure there is an immediate supply of tin available at the surface to provide a thin soft layer of tin over the aluminium and thus inhibit surface breakdown.

The new alloy, therefore, combines the strength of a continuous aluminium phase with the tin-availability of a comparatively heavy and continuous tin structure. When supplied in the form of steel-backed bearings, it provides a better balance between the opposing demands of high fatigue strength and low rates of wear than any other known plain bearing. Furthermore, unlike copper-lead bearings, it needs no lead-based overlay plating to keep shaft wear in check. A significant feature for large diesel engine applications is that since the alloy contains no free copper there is no danger of copper penetration of steel journals.

Reticular aluminium-tin bearings can be supplied pre-finished but since they have no overlay plating they can equally well be supplied semi-finished for boring in place, as is often necessary or desirable in the case of large stationary diesel engines. The new bearings have already proved themselves in extensive road and test-bed trials carried out over the past three years and some half million bearings made from the new material are already in actual use. A point of some importance is that, compared with copper-lead plated types, steel-backed reticular aluminium-tin bearings are somewhat cheaper to manufacture.

★

LONDON BUS CONTROL

(*Continued from page 3*)

on a rotating disc, the number of slots and the speed of its rotation results in the light being broken up into impulses numbering 3,000 per sec. These light impulses are passed to two mirrors set at right angles, which divide the beam into two, and by further mirrors deflected one onto the time base plate and the other onto the coding plate. The light reflected from these plates is passed into the scanner once more and focussed onto two photo-sensitive transistors which transform the light impulses into electrical impulses, still at 3,000 per sec., which are then passed to resonant amplifiers. These reject the effect of all extraneous incoming light not associated with that sent out by the instrument's lamp at the controlled frequency, and therefore not part of the bus identification.

Neither the 3,000-cycle modulation nor the wave form of the resulting signals would be suitable for operating the telephone-type circuits which follow, and so they are passed into pulse-shaping transformers where a square wave-shaped pulse is produced from each signal from the reflectors. The pulses from the time base plate are now paired with those of the code plate by feeding them to cold cathode valves, and when both time base and code valves fire together, relays are operated, thus storing the code so formed. Experiments are in progress in the use of red reflectors for those positions in the time base corresponding with blanks in the code target. This might permit the code target array to be dispensed with.

Control Room

As at least two scanners, and maybe more in busy traffic centres, will share the telephone line to the control centre, the code is stored by the relays mentioned above. These are released in turn over the line as pulses similar to those experienced when dialling a normal telephone subscriber instrument, except that the number will still be in binary form.

The current is passed to a control room at London Transport headquarters at 55 Broadway. Here the electrical impulses are translated into the identification number of the bus in question and this number is flashed up on an illuminated panel. Each successive bus is scanned in the same way, the identification numbers coming up in order in the control room. There will be eight scanners on 74, four for each direction, when B.E.S.I. comes into operational use this spring. At present a prototype scanner is installed above the railway parapet at West Brompton Station, immediately short of the Empress Hall turning point. The four southbound scanners will be located at Baker Street, Hyde Park Corner, West Brompton and Putney—those for northbound buses at the same points, except that there will be one at Camden Town terminus instead of Putney. Each section is thus two or three miles in length.

Permanent Record

In addition to lighting the indicating lamp, a recorded pen mark can be made on a chart moving forward on a scale of time, which forms a permanent record of the time each bus enters the section, and hence the regularity of the service. The band of squared paper is marked off in hours and minutes and the recording pen traces lines the length of which represent the bus number and the intervening distance the interval between buses. An alternative would be punched tape recording.

The route controller will be able to note that southbound route 74 buses numbers 17, 3, 4 and 2 are at a given moment in the Hyde Park Corner section, while four more buses—12, 14, 18 and 24—are behind them in the Baker Street section. The identification numbers will correspond to those on a special roller-strip timetable in the control office and the official will therefore be able to check on the general situation by comparing the numbers that come up on the panels with those which his roller timetable tells him ought to be there. If the service is running irregularly, he can issue telephone instructions as to what is to be done, and because of the overall picture given by the panels, he can do this quickly and effectively, before serious gaps or delays build up. This electronic device should enable the bus running inspectors to do a better job (a description of present roadside controls appeared in our September 29, 1956, issue). When it has been proved in service it will be extended to other City and West End routes.

GREAT EASTERN HOUSE

New Eastern Region Premises at Cambridge

WE referred in our December 28 issue to the opening by Sir Hamilton Kerr, M.P., on December 18 of Great Eastern House, Cambridge, the new headquarters of the Cambridge traffic manager of the Eastern Region's Great Eastern line. The other traffic managers of the Great Eastern line, all of whom began fully functioning on Monday of this week, are located at Liverpool Street (offices at Hamilton House) and Norwich (offices at Norwich Thorpe Station). These three traffic managers are responsible to Mr. W. G. Thorpe, line traffic manager for the Great Eastern (located at Hamilton House in London), but will exercise a greater degree of authority in day-to-day affairs than has hitherto been devolved from headquarters. They will undertake, through their district officers, control of all traffic movement and of all commercial aspects of railway business in the territories with which they are concerned. In this way, the production and sales aspects of railway business will be co-ordinated at local level. It will be the especial duty of the traffic managers to ensure that railway services, facilities and charges can be quickly adapted to meet the needs of industry and the travelling public.

Railway office accommodation in Cambridge has hitherto been lacking in capacity and amenity and plans have been under consideration for some years to consolidate it. The full benefits of the new organisation would not be realised if the offices concerned with the operation of traffic were not under one roof and it was, therefore, decided that for the staff of the traffic manager, Cambridge, Mr. W. A. G. Suddaby, M.B.E., the scheme for an entirely new block of offices should be implemented. The building also serves to house the Cambridge Railway Social Club.

Traffic Staff

A useful pamphlet is being supplied to traders in the Cambridge district; it introduces Mr. Suddaby, gives the names of his principal assistants (Mr. R. F. Graveson, district commercial officer; Mr. H. S. Crosthwaite, district operating superintendent; and Mr. G. C. Parslew, district motive power superintendent; with Mr. I. R. Gamble on the commercial side at Peterborough and Mr. G. R. Bonavia as sales and development assistant in Cambridge) and also gives telephone extensions for those in charge of various facilities and services. All stations in the area are listed and a map is available showing its boundaries.

Handsome Modern Building

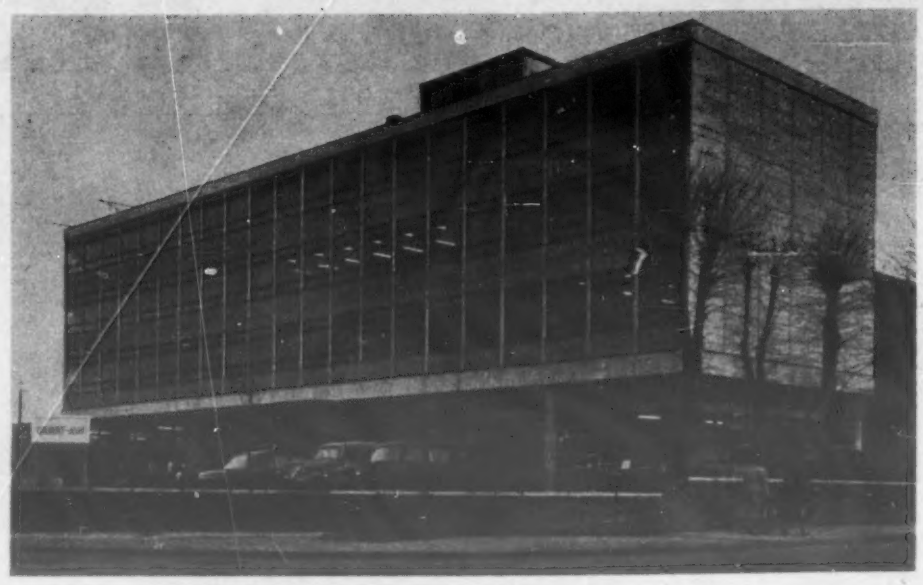
Great Eastern House is situated at the junction of Station Road and Tenison Road, within a short distance of the railway station, and is in keeping with the best architectural traditions of Cambridge. The Cambridge Planning Authority has welcomed the improvement which it gives to an important approach to the town and the building has also gained the approval of the Royal Fine Arts Commission. It replaces a number of obsolete and unsightly huts in the vicinity of the station.

The three upper floors and part of the ground floor of this four-storey building are to be used as offices, and the remainder of the ground floor is occupied by the entrance hall and inquiry desk, as well as by the accommodation for the Cambridge Railway Social Club. The building is set back from the road, and the area fronting it has been planted with grass and shrubs. A car park has also been provided at the front of the building. A traffic relief road is planned to be built later and the building is aligned suitably for it.

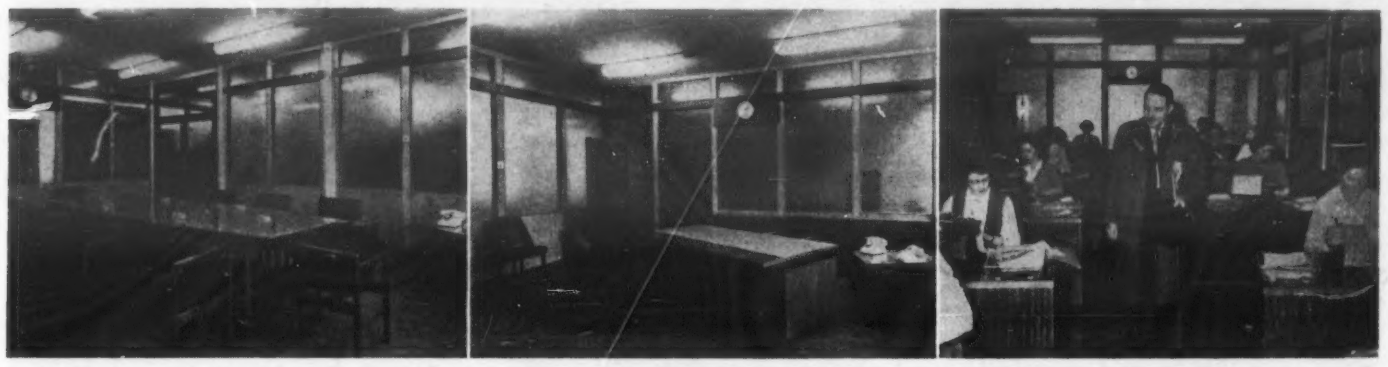
Construction

The ground floor has a reinforced concrete frame, and the upper floors have been constructed from precast prestressed concrete components, using the Intergrid system. The external walls are finished with grey-brown facing bricks at ground floor level and with contrasting grey granite-faced slabs above. To allow for changes in accommodation requirements in the future, the offices are separated from each other by partitions which can be removed and placed elsewhere without structural alterations. The interior of the building is modern, colourful and easy to keep clean, and the furniture, which has been designed by the Eastern Region architect, is in the contemporary style which has been adopted throughout that region for new office furniture.

The use of prefabricated materials wherever possible, coupled with careful programming of the work, has enabled the whole job to be carried out from site preparation to furnishing between February and November of this year in good time for the start of the new traffic organisation on December 30. The building was designed by Mr. H. H. Powell, the Eastern Region architect, under the general direction of Mr. A. K. Terris, chief civil engineer, Eastern Region. The general contractor was Gilbert-Ash, Limited, London, W.1.



Great Eastern House, Cambridge, as seen from Station Road



The conference room at Great Eastern House; the office of the traffic manager; and, right, Sir Reginald Wilson, chairman of the Eastern Area Board, visits the typists office during his inspection of the new building

CONTACT CONNECTORS

Modern Acoustics New Range

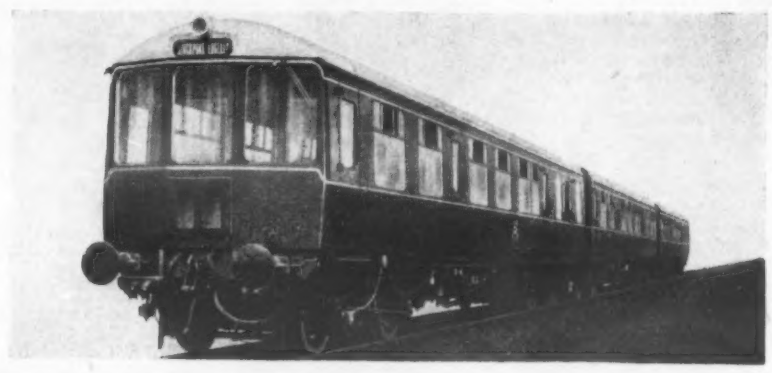
OF interest in transport in signal engineering and rolling stock installations as well as in many other branches of industry, a wide range of new-type electrical plugs and sockets has been introduced by the contact connectors division of Modern Acoustics, Limited, Manor Way, Boreham Wood, Herts. This new range, which meets the stringent electrical and mechanical requirements of modern electrical equipment, will be manufactured in the United Kingdom under licence from Tuchel Kontakt, Germany. All world-marketing rights outside Europe for the patented Tuchel design have been assigned by the Plessey Co., Limited, to Modern Acoustics, which has been engaged in the production of plugs and sockets and prefabricated wiring systems for the past 20 years.

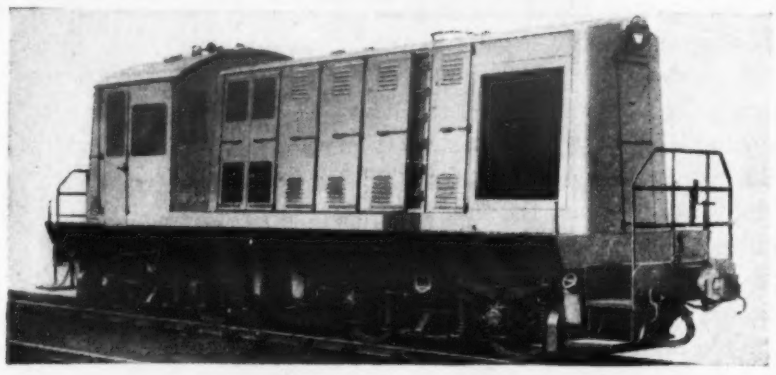
Dirt-free Surfaces

The patented contact principle employed in the Tuchel design differs radically from more traditional systems in that the construction is based on the theory that surfaces kept free of oxide film and dirt are more important factors than contact pressure. Basically, the contact consists of a series of tubes of decreasing diameters, opened longitudinally with two or more transverse slits, assembled one within the other in a floating spring assembly. As the contact blade is introduced, the front edges of the spring assembly rub against it cutting through existing dirt or oxide film, a process that is repeated through as many spring banks as are employed. Other important features are a multiple number of independent contact points for each pole, low contact resistance with large contact area, unaffected by vibration, effective in a wide range of temperature and simple engagement or disengagement.

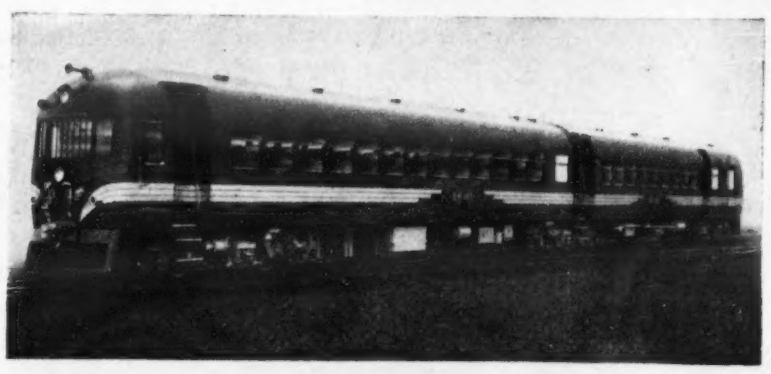
COMMONWEALTH RAILWAYS OF AUSTRALIA
955 H.P. Diesel-Electric Locomotive (10 Ton Axle Load)
In collaboration with Sulzer Bros. (London) Ltd. and Crompton Parkinson Ltd.

BRITISH RAILWAYS
Three Unit Diesel Mechanical Railcars

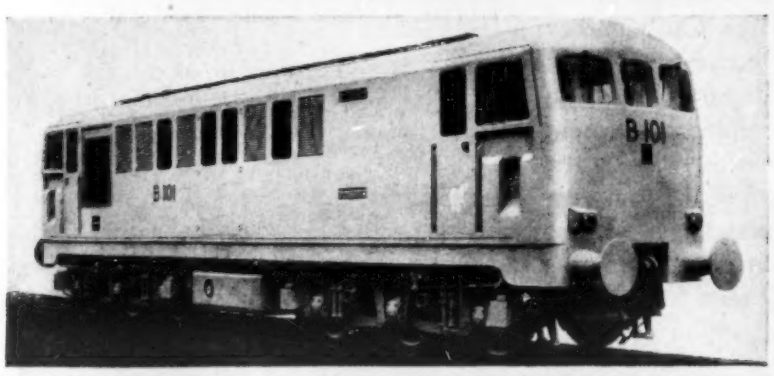




GHANA RAILWAYS
400 h.p. Diesel Electric Locomotive

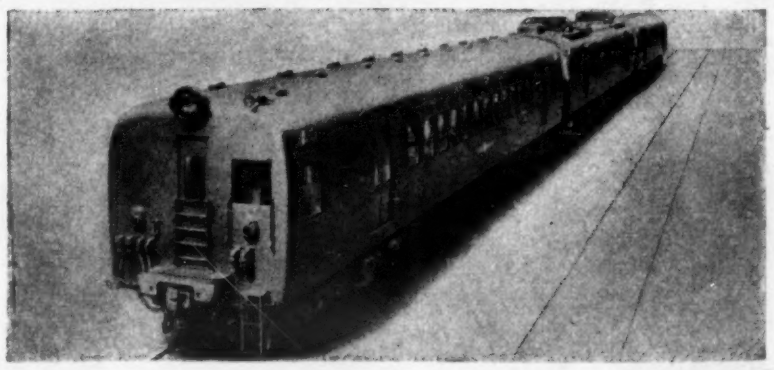


NEW ZEALAND GOVERNMENT RAILWAYS
Twin Articulated Diesel Mechanical Railcars
In collaboration with The Drewry Car Co. Ltd.



CORAS IOMPAIR EIREANN RAILWAYS
960 h.p. Diesel Electric Locomotive

SANTOS JUNDIAI RAILWAY, BRAZIL
3,000 Volts, 800 H.P. Three Car Train
In collaboration with The English Electric Co. Ltd.



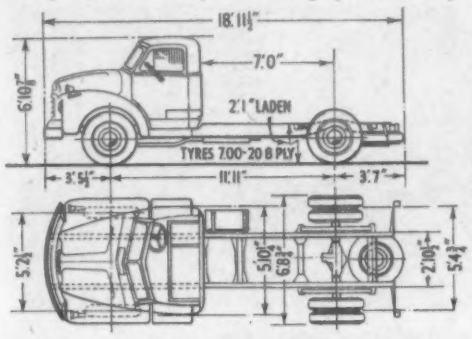
THE BIRMINGHAM RAILWAY CARRIAGE & WAGON CO·LTD
Smethwick
TELEPHONE SMETHWICK·1881
TELEGRAMS 'CARRIAGE SMETHWICK'

COMMERCIAL VEHICLE TEST

*Bedford 3-Ton Diesel Dropside Lorry**

UNOBTRUSIVE NEW FOUR-CYLINDER ENGINE PERFORMS WELL

OPPORTUNITY was taken recently to subject to a day's hard work over our standard test route the Bedford 3-ton lorry fitted with its new diesel power unit—the Vauxhall Motors designed and built four-cylinder engine announced in October. Recalling the outstanding performance in our road test of the Bedford six-cylinder diesel, with which the four has common combustion characteristics and many common components, we anticipated at the very least a highly satisfactory



Drawings giving principal dimensions of the Bedford D3LD7 chassis

performance and in this there was no disappointment. The engine possesses typical diesel slogging ability in full measure and over our standard 15-mile fuel consumption course it returned the very creditable figure of 146.3 gross ton-miles per gallon. Moreover, it did its work generally in unobtrusive fashion, its bonneted configuration helping to keep engine noise in the cab at a low level.

High Payload Capacity

The latest version of the Bedford three-tonner has already been described in earlier issues of MODERN TRANSPORT. With a wheelbase of 143 in., fitted with a works-built dropside body 11 ft. 6 in. long and 6 ft. 6 in. wide and with the Bedford four-cylinder diesel, it has an operational tare of about 2¼ tons (2 tons 7 cwt. in licensing order), permitting a payload of about 3 tons 13 cwt. within the maker's recommended gross weight of 13,800 lb. The Bedford diesel engines have also been described in our columns, the six-cylinder unit on February 16, 1957, and the four-cylinder engine on October 5.

Briefly, the standard diesel power unit for the three-tonner is a four-cylinder vertical in-line direct-injection engine of 3⅞-in. bore and 4½-in. stroke, giving a displacement of 200.48 cu. in. (3.285 litres). With a compression ratio of 17 to 1, it develops maxima of 64 b.h.p. at 2,800 r.p.m. and 143 lb./ft. torque at 1,400 r.p.m. Principal features are prefinished dry-type cylinder liners, five-ring (top chromium plated) aluminium-alloy pistons, replaceable copper lead-lined crankshaft bearings, counterbalanced crankshaft with cold-rolled fillets and induction-hardened crankpins and journals and gear-driven camshaft and auxiliaries. The combustion chambers are formed by toroidal cavities in the piston crown and swirl is initiated by directional air-inlet porting. A great deal of research has gone into the design of the combustion chamber to ensure an adequate supply of turbulent air to each plume of atomised fuel from the four-hole C.A.V. injector nozzles, thus securing efficient combustion.

Minor injector troubles should be kept to a minimum by virtue of effective cooling, obtained by mounting the injectors in copper-plated steel sleeves directly in the cylinder-head water jacket. Normal servicing of the fuel-injection equipment, which comprises a C.A.V. in-line pump embodying a diaphragm lift pump and pneumatic governor, is simplified by the provision of quick and foolproof means of vertical and horizontal alignment and simple connections in the fuel pipes permitting easy replacement. The injection pump embodies an excess-fuel device (sensibly under the bonnet out of reach of the bad driver) for cold-weather starting and for operation in extremely cold conditions there is provision for a factory-fitted thermo-starting system.

Four-Point Suspension

The four-cylinder diesel engine in unit with the clutch and synchromesh gearbox is supported in the chassis on four widely-spaced flexible shear-type mountings, in contrast to the three-point mounting of the larger engine. Despite this, there was some torsional oscillation apparent with the vehicle we tested under the more difficult conditions of starting, but this was not serious and it was generally possible to feather the clutch and hold the vehicle stationary on gradients for quite lengthy periods without the onset of judder. There was also a slight period noticeable at about the middle of the engine speed range both when accelerating and on heavy overrun. This was short in duration and otherwise the engine was very smooth for a four-cylinder unit.

Acceleration performance as shown in the table was well up to the standard expected of this class of vehicle, particularly as it was carrying about a 3-cwt. overload, and as we usually find with Bedford vehicles, speed away from stops was greatly helped by the ease of gearchanging in the synchromesh box. Judging by the way the vehicle responded in our observed hill-climbing sections—Worms Heath and Westerham Hill and an easy restart on the 1 in 4½ section of Succombs Hill—the 6.2 to 1 axle ratio as fitted would be the right selection for vehicles operating mainly fully laden under normal conditions. For operation with generally lighter loads or in predominantly flat country, the 5.286 to 1 axle could be specified with advantage.

The engine is governed to 2,600 r.p.m., providing nominal maximum road speeds in the four gears with the lower axle ratio of 6, 12.8, 25.1 and 43 m.p.h. In practice, the not very sharp cut-off characteristic of the pneumatic governor permitted recorded speeds on level road of 27-28 m.p.h. in third and 47-48 m.p.h. in top gear. The speedometer was reading about ½ m.p.h. fast at 30 m.p.h. The odometer recorded exactly 15 miles over a measured 15-mile section of our route.

Outstanding Brakes

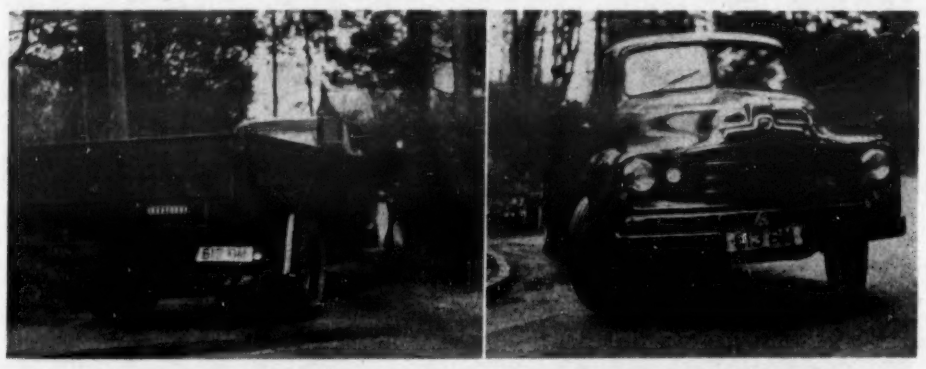
Among the features of all vehicles in the current Bedford range is the standardisation of moulded brake linings and wider variation of brake dimensions to provide suitable specific lining area in each weight capacity. In the 3-tonner, 14-in. dia. brakes are now fitted all round, giving a lining area of 51 sq. in. per ton of recommended gross weight. With vacuum-assisted hydraulic operation through the pedal, these gave some outstanding results in a series of emergency stops from 30 m.p.h. in which the distance from first application of the brakes to the point of stopping was measured with our chalk-firing magazine. The stops were made on level dry open-texture tarmac and the average stopping distance was 37 ft. 6 in. Tapley meter readings during the tests ranged around 90 per cent and the handbrake alone produced 38-42 per cent Tapley readings in stops from around 20 m.p.h.

Our usual coasting run down Titsey Hill keeping the road speed down to 20-22 m.p.h. on the footbrake heated the drums and linings sufficiently to cause some fade. Quick recovery from this condition was, however, evident when, after about a mile at normal speed, an emergency application at 30 m.p.h. produced a Tapley meter reading of 62 per cent.

Fuel Consumption

Our dual fuel-consumption check followed normal procedure. The first, taken over a standard out-and-back country main-road course of 15 miles, indicates a likely return for a vehicle maintained in good condition used in mainly laden running in average operating conditions; part-empty and a fair percentage of long-distance work would usually show an improvement on our figures. In this check,

(*Continued on page 13*)



Front and rear views of the Bedford during some tight manoeuvres; in the right-hand picture the vehicle is reversing smoothly off a 1 in 5 gradient into a narrow side-road

* No. 442 in the MODERN TRANSPORT series of road tests.

TEST RESULTS AT A GLANCE

Vehicle Details

MAKER: Vauxhall Motors, Limited, Luton, Bedfordshire.

TYPE: Bedford D3LD7 3-ton dropside lorry

ENGINE: Bedford four-cylinder direct-injection diesel, bore 3⅞ in. (98.42 mm.), stroke 4½ in. (107.95 mm.), capacity 200.48 cu. in. (3.285 litres); compression ratio 17 to 1; 64 b.h.p. at 2,800 r.p.m., 143 lb./ft. torque at 1,400 r.p.m.

TRANSMISSION: **Clutch,** Borg and Beck single dryplate, 10 in. (254 mm.) dia., 94.25 sq. in. (608 sq. cm.) lining area; **gearbox,** Bedford four-speed synchromesh, ratios 7.059, 3.332, 1.576 and 1 to 1 forward, 7.059 to 1 reverse; **driveshaft,** open two-piece shaft with Hardy Spicer needle-roller bearing joints and flexible intermediate bearing; **rear axle,** fully floating spiral bevel, ratio 6.2 to 1 (alternative 5.286 to 1.)

BRAKES: Vacuum servo-hydraulic 14 in. (355.6 mm.) dia. all round, total lining area 314.4 sq. in. (2,055 sq. cm.). Handbrake mechanical to rear wheels.

TYRES: 7.00-20 8-ply (alternative tubeless equipment available at same price).

WHEELBASE: 11 ft. 11 in (3.63 in.).

WEIGHT: Dropside lorry complete in taxation trim 2 tons 7 cwt. (2,387.7 kg.).

PRICE: Complete diesel dropside lorry £918; chassis only £781; plus British purchase tax in each case £178 16s. 1d.

Test Results

ROUTE: MODERN TRANSPORT route in Kent and Surrey.
CONDITIONS: Cloudy and cold.
RUNNING WEIGHT: 6 tons 6 cwt. (6,401 kg.) plus crew of two.
PAYLOAD: 3 tons 15¼ cwt. (3,822.8 kg.).
FUEL CONSUMPTION: Over 15 miles continuous running, 22.86 m.p.g. (8.1 km. per litre) at 27.3 m.p.h. (43.6 k.p.h.) average speed.
GROSS TON/M.P.G.: 146.3 (52.61 tonnes/km./litre).
PAYLOAD TON/M.P.G.: 85.9 (30.92 tonnes/km./litre).
MAXIMUM GRADIENT CLIMBED: 1 in 4½ (23.5 per cent).
TURNING CIRCLE: Right lock wheeltrack 46 ft. 6 in. (14.17 m.), sweep 49 ft. (14.93 m.).
ADJUSTMENTS DURING TEST: None.
ACCELERATION:
Averages of four runs through gears:
0-20 m.p.h. 11.7 sec.
0-30 m.p.h. 28 sec.
In top gear:
10-20 m.p.h. 14 sec.
10-30 m.p.h. 34.5 sec.
BRAKING: Mean of measured emergency stops on dry level tarmac from 30 m.p.h. 37 ft. 6 in. (11.4 m.), equivalent to 25.8 ft. per sec per sec. or 0.8 g. average retardation. Handbrake only from 20 m.p.h., 38-42 per cent on Tapley meter.
ESTIMATED TOP SPEED: 48 m.p.h. (77 k.p.h.).
OVERALL FUEL CONSUMPTION: For 90 miles run, including 20 miles in London suburbs and numerous stops in various tests, 18.4 m.p.g. (650 km. per 100 litres).

First on the road.. most on the road

KERBSIDE WEIGHT UNDER 6 TONS
ACCOMMODATION FOR 41 SEATER LUXURY BODY
HIGH ECONOMY 105 H.P. UNDERFLOOR ENGINE

The first low-weight big capacity coach ever built, the 'Tiger Cub' of today benefits from the experience drawn from an EXTRA million running miles.

When introduced in 1952, operators all over the world classed it as the ultimate in design. After all, though under 6 tons unladen, it was built for 41-seater luxury bodies. It had an economy underfloor engine that made nonsense of normal fuel consumption figures . . . not a belt-drive anywhere in the chassis . . . airbrakes setting new high safety values . . . and it came as a revelation in low-cost luxury.

But Leyland admits no finality in design, and modern 'Tiger Cub' coaches are stepped up in power by the famous Leyland 105 h.p. diesel, while the Pneumo-Cyclic gearbox with 2-pedal control is now an alternative to the conventional 5-speed constant mesh box.

Most on the road? Well, what else could you expect?

TIGER CUB Leyland TIGER CUB

LEYLAND MOTORS LTD. Home Sales Office: 3 LYGON PLACE, LONDON, S.W.1. Tel: SLOane 6117
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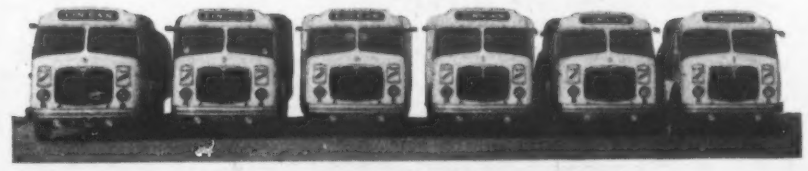
Six of the best for—
LIN-CAN



Homalloy LIGHT ALLOY helps
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Light Alloy or Plastic
CABS & BODIES

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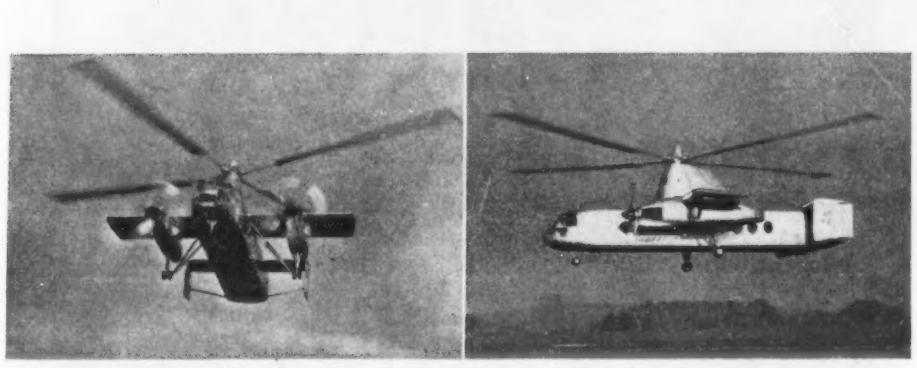
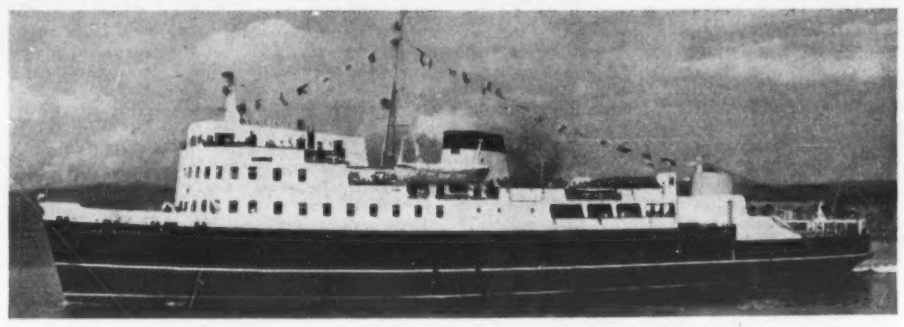
ASPECTS OF TRANSPORT IN 1957

In October the West London Air Terminal built over Cromwell Curve replaced Waterloo Air Terminal

In November King Gustav Adolf of Sweden formally opened the central connecting link of the Stockholm underground system

The new "Duke" vessels are maintaining the Heysham—Belfast service of the London Midland Region and the relief ship is to cruise from Southampton in the early summer; right, the Bristol Britannia is now in service on medium- and long-range routes of B.O.A.C., El Al and Aeronaves de Mexico





The Fairey Rotodyne, so full of promise for city-to-city transport, has commenced its proving flights; right, the new "Glen Sannox" which entered the service of the Caledonian Steam Packet Company last July and plies between the mainland and Arran

The special train for the recent Canadian Trade Mission to Britain which is here seen at Glasgow Central was hauled for some of its journeys by the Napier-engined English Electric Deltic locomotive; right, deliveries of the 800 series of Vickers Viscounts are well under way and this is the first of three for Aer Lingus

Multiple-unit diesel-electric sets were introduced by the Southern Region between London and Hastings via Tunbridge Wells in May and this conversion will be completed next summer; the Thornycroft Big Ben, many of which have been ordered for oilfield use, is notable for employing a production turbocharged engine. It is here seen under test by "Modern Transport"

The first North British 2,000-b.h.p. diesel-hydraulic main-line locomotive for British Railways is seen during trials; right, two 41-seat A.E.C.s for Highland Omnibuses, Limited, had their production accelerated to be available for Christmas traffic and were delivered with only technical stops on the 750 miles to Inverness. A further four will follow

PERMANENT WAY SAFETY

London Transport Posters

SOME three years ago London Transport set up a permanent way accident prevention committee to put into effect ways of impressing on permanent way staff the necessity for exercising care when in the vicinity of railway track. The illustration here is of a poster which is being displayed in all permanent way messrooms on the Underground system. It is the second of a series of four which are designed to call attention to some of the more serious mishaps that can occur in permanent way work. Each depicts a number of cartoons which tell their own vivid story and which have been drawn by Mr. A. Gorton of London Transport's railway operating staff.

The poster is one of the ways which the committee is using to approach the staff. Other methods

of approach are the issue of a booklet—*Safety on the Track*—to each member of the staff, including all new entrants; the training of all new members of the staff at the permanent way training school; the posting of concise notices, on distinctive coloured paper, drawing attention to particular incidents which have actually resulted in accidents to staff; and by occasional lectures, illustrated with a special film, also entitled *Safety on the Track*.

These lectures have been given during working hours so that all permanent way staff have had the opportunity of learning from the mistakes of others. Further methods of approach are under consideration. Prior to the establishment of this committee, occupational accidents of all types to permanent way staff were occurring at the rate of 33 a month; this rate now averages 15 a month.

BEDFORD 3-TON DIESEL LORRY TEST

(*Continued from page 11*)

which was run in the rather low ambient temperature of 45 deg. F. and in fairly heavy traffic that caused some baulking and three complete stops, the Bedford returned 22.86 m.p.g. at an average speed of 27.3 m.p.h., representing a gross ton-m.p.g. figure of 146.3 and a payload ton-m.p.g. figure just short of 86.

The second check is made by filling the tank at the beginning and end of the day's run. As this is comprised of about 20 miles in the south-west London suburbs with much of the remainder on the hilly Kent and Surrey borders and includes many stops and the braking and acceleration runs, it is fairly indicative of the sort of result that might be expected under the worst conditions of heavily laden short-haul work. The consumption for a total distance covered of 90 miles was 18.4 m.p.g.

Our findings when we first tested the current Bedford 3-tonner in February are worth repeating. It is an easy vehicle to drive, with light con-

Despite the many warning signs, the fully laden vehicle coped easily with 1 in 4½ Succombs Hill

trols and accurate steering and its four wheels planted firmly on the ground under almost all conditions of driving. The application of the new Bedford diesel engine to this chassis at an increased basic cost over the petrol-engined version of only £125 (£156 inclusive of home market purchase tax) makes it an economic proposition even where annual mileage is not very high. The six-cylinder Bedford diesel is now in widespread service in many parts of the world and is reported to be giving excellent results both as regards performance and reliability and there is no reason to suppose that the smaller unit will be any less successful.

The majority of machines in the range of Weatherill hydraulic loading shovels are now being offered with a Brockhouse torque-converter transmission as an alternative to the normal friction clutch and gearbox.

IMPORTANT CONTRACTS

U.S. Military Air Transport

ORDERS have recently been placed by the United States Air Force for about 70 large troop-cargo air transports. Two orders are involved, one with the Lockheed Aircraft Corporation worth £36 million for 53 C130B Hercules turboprop machines and the second with Douglas Aircraft Company worth £15 million for an unspecified number of C133A turboprop aircraft. The Douglas C133A is said to be the largest production transport ever built. The Lockheed C130B, which has a maximum take-off weight of 140,250 lb., is a larger and faster version of the C130.

Daimlers for Durban

About to enter city service in Durban, South Africa, are eight new Daimler Freeline chassis fitted with Blanckenbergs (Cape Town) 36-ft. long single-deck all-metal bodies for one-man operation. The vehicles are powered by the Daimler 150-b.h.p. underfloor diesel engine and incorporate the Daimler fluid flywheel and five-speed preselective gearbox and air-pressure braking.

Telecommunications Contract

A substantial contract has been awarded to Marconi's Wireless Telegraph Co., Limited, and Automatic Telephone and Electric Co., Limited, for a multichannel radio telecommunications system linking the towns of Luanda, Malange and Marechal Carmona in Angola, Portuguese West Africa, through the companies' associate, Automática Eléctrica Portuguesa (S.A.R.L.) by the Angolan Postal and Telegraph Authorities.

Scottish Bakery Orders Albion Vans

New vehicles for an already large delivery fleet are being acquired by the United Co-operative Baking Society, Limited, which has placed further orders with Albion Motors, Limited, through the Scottish C.W.S., for 20 chassis of different capacities. In recent years, the Baking Society has already bought well over 100 Albion vans and lorries. Vehicles now ordered include 10 Claymore 5-tonners designed to take van bodies 17 ft. long by 6½ ft. wide and 10 Cairn 30-35 cwt. chassis. Both types have underfloor diesel engines.

Tiger Cubs in Demand

For the second time this year, North Western Road Car Co., Limited, has ordered Tiger Cub buses from Leyland Motors, Limited. The present order is for 15 PSUCI chassis with five-speed constant-mesh gearboxes, to be fitted with Willowbrook bodies before joining over 100 Tiger Cubs already in service with this operator. A repeat order for Tiger Cub coach chassis with Burlingham bodies has also been placed by Wallace Arnold Tours, Limited. These will incorporate Tecalemit Syndronic 25-point chassis lubrication. An important overseas order for 55 Tiger Cub buses has come from the Ceylon Transport Board. Of these, 10 will have the Leyland Pneumo-cyclic transmission.

Kent Coast Diesels Ordered

A contract has been placed with the Birmingham Railway Carriage and Wagon Co., Limited, by the British Transport Commission for 45 main-line diesel-electric locomotives of 1,550 h.p. for use on the Kent Coast lines of the Southern Region of British Railways. These lines are to be electrified

(*Continued at foot of next column*)

SHIPPING and SHIPBUILDING

Laid Up Tonnage

DURING November last year, tonnage idle at ports in Great Britain and Ireland other than that under repair increased by nearly 100,000 tons gross. At December 1, it totalled 321,802 tons, represented by 71 ships and was the highest since Chamber of Shipping returns recommenced in 1950. Foreign vessels brought the total to 88 ships and 412,353 tons. The tonnage of vessels under repair, however, declined by over 200,000 tons, including foreign vessels.

Los Angeles Terminal Building

OUT of harbour revenues during the next five years, the Port of Los Angeles plans to build a new $15 million combination passenger and cargo handling terminal. The announcment followed the signing of an agreement by the Board of Harbour Commissioners and the American President Lines, providing preferential treatment for the latter. All American President Line passenger and cargo business in Los Angeles and the surrounding area will be handled through this facility for at least 20 years. The project includes a two-storey passenger-cargo shed, 1,050 ft. by 200 ft.; a single-storey cargo-shed, 630 ft. by 200 ft.; 2,400 ft. of wharf; and rail facilities, refrigerated cargo space, latex tanks, hard surfaced parking area for 2,000 cars and access roads.

Transfer to Flags of Convenience

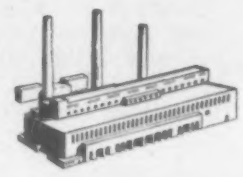
IN the House of Commons just before the Christmas recess, Mr. A. S. Neave, Joint Parliamentary Secretary to the Ministry of Transport, gave the Government's reasons for refusing to ban transfers of British ships from U.K. or Commonwealth registers to "flags of convenience." It would not be in the national interest, he said; the sale of secondhand tonnage was a traditional means adopted by U.K. shipowners to raise funds to buy new ships. If the secondhand market were restricted by such a ban, our shipowners would be handicapped in the disposal of obsolescent, uneconomical tonnage, particularly in relation to their competitors. The ban would be ineffective in preventing the growth of tonnage under "flags of convenience" because owners operating under those flags would buy elsewhere. A unilateral ban by the U.K. would have little or no effect unless agreement could be reached with the other major maritime countries to follow our lead.

(*Continued from previous column*)

under the Kent Coast electrification scheme, the first phase of which, providing for the extension of electrification from Gillingham to Ramsgate and Dover via Faversham (including the Sheppey branch), is due to be completed in 1959. The locomotives will be used mainly for hauling freight traffic and for inter-regional passenger services which cannot be operated by electric multiple-unit trains or electric locomotives. The diesel-electric locomotives will have a BB wheel arrangement (two four-wheeled bogies), will be numbered D6500-D6544, and classified as Type 3 in the British Railways' classification of diesel locomotives. They will have Sulzer diesel engines (manufactured in Britain by Vickers-Armstrongs) and Crompton-Parkinson electrical equipment.

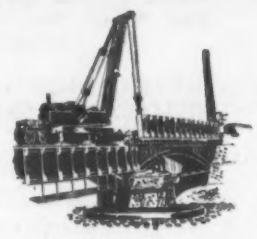
A need is met

by

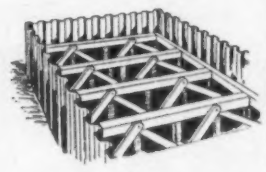


POWER STATIONS Cleveland have played their part in meeting Britain's need for more electrical energy. The huge steel frames have been fabricated at top speed with highly developed welding techniques. Members are produced up to 95 ft. long and 42 tons in weight, with a tolerance in length, twist or bow not exceeding ⅛ inch.

CLEVELAND



RAILWAYS Movement of merchandise and people becomes yearly a greater task. Cleveland are helping not only with the construction of new bridges, but the re-construction and repair of old bridges.



DEEP FOUNDATIONS Necessity and not the ease of engineering dictates where many structures must be sited. So deep foundations are needed. Cleveland have wide experience all over the world and can be relied on to appreciate difficulties and find sound solutions.

As new needs occur, so new problems arise. Cleveland welcomes the chance of assisting in their solution. Excellent facilities are available for design, detailing, fabrication and construction.

THE CLEVELAND BRIDGE & ENGINEERING CO. LTD. DARLINGTON.

GLYN, MILLS & CO.

BANKERS

67 LOMBARD STREET, LONDON, E.C.3

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WILLIAMS DEACON'S BANK LIMITED

Champions of the Road!

Helmsman BUILT
ROAD TANKERS

Individually prepared specifications to suit customer's own purpose and method of operation. Designed and mounted to conform to chassis maker's specifications of overall weight and axle loadings. Complying fully with statutory regulations and safety requirements.

For the experienced operator—We can incorporate any features, accessories and fittings desired, to conform to customer's existing standardized practice and specialized needs.

For the newcomer to this field—We can develop outline proposals, make recommendations and send an expert representative at short notice to discuss proposals and plans with the user.

We also manufacture

TANK STORAGE PLANT and STEEL PLATE EQUIPMENT of all kinds.

for PETROL, OIL, WATER, CHEMICALS and all other liquids

W·B·BAWN
& COMPANY LIMITED

Blackhorse Lane, London, E.17. LARkswood 4411/4

OFFICIAL NOTICE

SALFORD CITY TRANSPORT

Appointments of
(a) Deputy Rolling Stock Engineer
(b) Draughtsman

APPLICATIONS are invited for the following appointments on the permanent staff of Salford City Transport.

(a) Deputy Rolling Stock Engineer.
Candidates should preferably be Corporate Members of the Institution of Mechanical Engineers or hold an equivalent technical qualification, and should have previous experience with a road passenger transport undertaking. The salary for this post is in accordance with A.P.T. Division, Grade IV, of the National Scales of Salaries (minimum £1,025, maximum £1,175 per annum).

(b) Draughtsman.
Candidates must have had appropriate training as draughtsmen and be suitably qualified. The salary for this post is in accordance with A.P.T. Division, Grade I, of the National Scales of Salaries (minimum £575, maximum £725 per annum).

The above appointments are superannuable and the successful candidate will be required to pass a medical examination.

Forms of application may be obtained from the General Manager and Engineer, Salford City Transport, Frederick Road, Salford 6, Lancs, to whom they should be returned, duly completed, not later than 9 a.m. on Monday, January 20, 1958, quoting reference E.S.11.

R. Ribblesdale Thornton,
Town Clerk.

A Subscription to
MODERN TRANSPORT
will keep you in touch with all British and Foreign transport developments

REGULAR CARGO SERVICES
between
LONDON
and

HAMBURG, BREMEN, RHINE PORTS, HARLINGEN, AMSTERDAM, ROTTERDAM, ANTWERP, GHENT, TERNEUZEN, DUNKIRK, CALAIS, BOULOGNE, TREPORT, DIEPPE, HAVRE, CHARENTE, BORDEAUX.

Coastwise to HULL

also between the following ports
LONDON, NEWCASTLE, MIDDLESBROUGH, and SOUTHAMPTON and OPORTO and WEST ITALIAN and SICILIAN PORTS.

BRISTOL CHANNEL PORTS (Bristol, Barry, Cardiff, Newport, Swansea) and HAMBURG, BREMEN.

SOUTHAMPTON and ANTWERP, ROTTERDAM, BREMEN, HAMBURG.

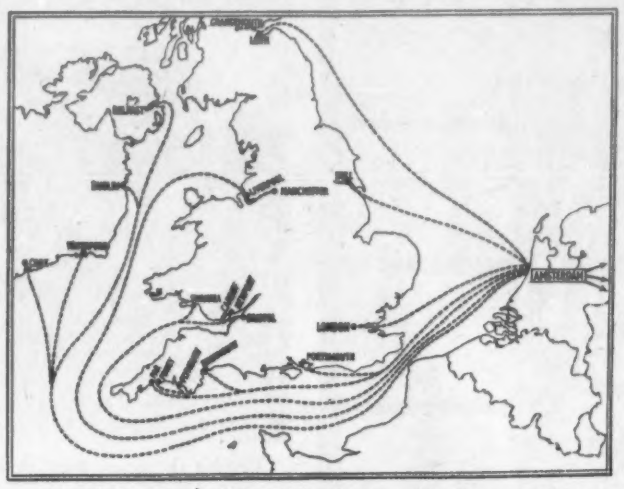
The GENERAL STEAM NAVIGATION CO. LTD.
15, Trinity Square, London, E.C.3
Phone: ROYal 3200

SEA LINKS WITH THE CONTINENT

*12—Holland Steamship Company (Cont.)**

IN the port of Amsterdam discharge and loading of ships berthed along the quays goes on without interruption, i.e. the transhipment from one sea-going vessel into another, or from a sea-going vessel into Rhine barges, or inland craft, and vice-versa. For the conveyance of goods that are for transhipment from one vessel into others, and the transport of goods to the town, use may be made, owing to the calm water, of the deck barge, a small level-decked vessel.

Amsterdam is used extensively as a port for transhipment. The facilities offered by the Netherlands Customs with regard to the import, export and transit of goods and their storage in bonded stores, are such that Amsterdam may be taken as equivalent to a free port. On goods which are put in store, and not immediately delivered, advances can be obtained pending the sale of the goods; for this purpose the warehouse companies issue warrants.



Regular services of the Holland Steamship Company from Amsterdam to British and Irish ports

The equipment of the docks with quays, transit sheds and cranes for the general transport of goods, is up to date. An extensive network of railways throughout the harbour ensures a rapid conveyance of goods to and from the docks, and suitable roads have been built to meet the increasing demands for motor transport. All sheds and warehouses can be reached by railway wagons, lorries and lighters. An official sailing list in English of the sea and Rhine port of Amsterdam is published fortnightly by the Port Management and the Shipping Association, North, Weesperzijde, 150, Amsterdam (o).

Scope of Services

The map reproduced shows that regular sailings are provided by the Holland Steamship Company, or H.S.M., to use its Dutch initials, between Amsterdam and British and Irish ports, as follows:

(1) London	Thrice weekly
(2) Portsmouth, Plymouth—coupled with	
(3) Bristol, Newport, Cardiff, Swansea (Fowey, Par and Teignmouth as may be arranged)	Once weekly
(4) Dublin, Belfast (Cork and Waterford are also served usually fortnightly)	Once weekly
(5) Manchester, Liverpool	Once weekly
(6) Leith, Grangemouth	Twice weekly
(7) Hull	Twice weekly

A modern fleet of diesel vessels maintains the U.K. trade. Particulars of these vessels are set out in the accompanying table. A number of the vessels has cooling and freezing accommodation. Thus *Texelstroom* (9,000 cu. ft.), *Rijnstroom* (9,000 cu. ft.), *Grebbestroom* (9,800 cu. ft.) and *Vechtstroom* (9,658 cu. ft.) have cooling compartments in which temperatures are kept down to 40 deg. Fahr. *Eemstroom* has 3,820 cu. ft. for cooling, freezing (20 deg. Fahr.) or deep freezing (0 deg. Fahr.), while the newest vessels, *Hontestroom* and *Vliestroom*, have 5,100 cu. ft. cooling and 4,211 cu. ft. cooling and deep freezing capacity. The eight-year-old *Amstelstroom*, with three separate compartments, has two of them totalling 9,620 cu. ft. providing cooling and freezing, and the third, of 1,900 cu. ft., also available for deep freezing. It should be added that such accommodation is being increased as opportunity offers.

Amsterdam—London

The Amsterdam—London service operates three times weekly with arrivals on Mondays, Thursdays and Saturdays, and sailings on Mondays, Wednesdays and Saturdays. In the Port of London the H.S.M. vessels berth at Chambers Wharf Cold Stores, Limited, enabling all its regular sailings to be maintained from one wharf. It is situated on the south bank of the Thames in Bermondsey, adjacent to Tower Bridge, with Tooley Street, the hub of the provision trade and other produce markets, immediately at hand. This central location is obviously a very great advantage to merchants and importers, and mention must also be made of the excellent cold storage facilities available.

The spacious quay and wide approach roads to the wharf allow unrestricted movement of road transport. There are adequate cranes available, the heaviest lift by shore cranes being 15 tons. It is sometimes necessary to provide for heavier lifts to be discharged or loaded at private wharves in the lower reaches of the Thames where static cranes are available for lifts up to 40 tons. In addition P.L.A. floating cranes up to 150 tons are available. British Amsterdam Maritime Agencies, Limited, 37-38 Fenchurch Street, E.C.3, is the H.S.M. agent.

South Coast

At Portsmouth vessels arrive once weekly sailing from Amsterdam Wednesday nights and discharging at Portsmouth on Friday mornings, whence they sail Saturdays direct to Amsterdam. Portsmouth, lying in a central position on the south coast, enables the H.S.M. to offer an excellent service to all importers within a radius of 50 miles from the port at economical rates. The normal berth is at No. 2 The Camber, situated just inside the harbour entrance and is provided with four concrete sheds, each capable of holding 100 tons general cargo, of which two sheds are bonded transit sheds. There is cranage up to 8 tons. Heavy lifts require special prior arrangements. Whilst these quays are not connected by rail, all types of commodities can be delivered quickly by road or to the nearest railhead. H. W. Richards and Sons, Chamber of Commerce Building, Commercial Road, Portsmouth, is the agent.

(To be continued)

H.S.M. VESSELS NORMALLY MAINTAINING THE U.K. SERVICES

Name Motor vessel	Built	Grt.	Nrt.	d.w. tons	Length ft.	Hatches	T/D	Derricks No.	Derricks Tons	Ref. or Cool Stowage	Bacon Tonnage	Bale Cube	Speed, loaded at summer mark
Amstelstroom	1950	497	217	706	225	2	Yes	4	5	Yes	160	56,500	12½ knots
Berkelstroom	1940	399	260	525	160	2	No	2	2	No		22,780	10 knots
Eemstroom	1940	399	165	529	207	2	Yes	2 2	2½ 4½	Yes	60	44,029	12 knots
Grebbestroom	1946	748	368	1,238	234	3	Yes	6 1	3 15	Yes	150	81,254	12 knots
Ijstroom	1950	499	222	755	225	2	Yes	4	5	No		56,500	12½ knots
Lingestroom	1947	748	368	1,277	234	3	Yes	6 1	3 15	No		81,254	12 knots
Rijnstroom	1941	708	360	1,161	246	3	Yes	6 1	2½ 15	Yes	150	85,070	11½ knots
Spaarnestroom	1942	857	454	1,177	211	2	Main Hold	2 2	2 1½	No		53,721	10 knots
Texelstroom	1947	1,377	652	2,143	280	4	Yes	10 1	3 15	Yes	150	139,450	12½ knots
Vechtstroom	1953	496	223	751	225	2	Yes	4	5	Yes	150	42,270	12½ knots
Zaanstroom	1952	496	218	765	225	2	Yes	4	5	No		56,500	12½ knots
Hontestroom	1957	499	219	769	225	3	Yes	4 2	5 2	Yes	150	53,573	12½ knots
Vliestroom	1957	499	219	769	225	3	Yes	4 2	5 2	Yes	150	53,573	12½ knots

* No. 11 appeared December 14, 1957.

TENDERS INVITED

THE following items are extracted from the Board of Trade Special Register Service of Information. Inquiries should be addressed, quoting reference number where given, to the Export Services Branch, Board of Trade, Lacon House, Theobalds Road, London, W.C.1.

January 9—Burma.—Union Purchase Board for 100 6-v. 21-plate BATTERIES and four sets of 24-v. BATTERIES. Tenders to the Union of Burma Purchase Board, St. John's Road, Rangoon. (ESB/30964/57.)

January 10—Union of South Africa.—South African Railways for 400,000 80-lb. BSS SOLEPLATES in cast steel, rolled steel or malleable iron. Tenders, endorsed "Tender No. A.6938: Soleplates," to the Chairman of the Tender Board, P.O. Box 7784, Johannesburgh. (ESB/30904/57.)

January 17—Portuguese East Africa.—Ports, Railways and Transport Department for 30 lots comprising 2,138 LOCOMOTIVE TYRES. Photocopies of tender documents available from Export Services Branch, B.o.T., price 5s. (ESB/30459/57.)

January 17—Korea.—International Co-operation Administration for 19 4 by 4 petrol-engined 2½ cu. yd. steel DUMP TRUCKS and various SPARE PARTS. Photocopies of tender documents from Export Services Branch, B.o.T., price 7s. (ESB/3117/57/ICA.)

January 17—South West Africa.—S.W.A. Tender Board for three Class I DIESEL GRADERS, three pneumatic-tyred BULLDOZERS and six 7 cu. yd. DIESEL SCRAPERS. Photocopies of tender documents from Export Services Branch, B.o.T., price 24s. (ESB/30313-30315/57.)

January 17—Union of South Africa.—South African Railways for 2,100 S-type AUTOMATIC COUPLERS and 1,270 T-type AUTOMATIC COUPLERS, all less coupling pin. Tenders, endorsed "Tender No. H.6903: Automatic Couplers," to the Chairman of the Tender Board, P.O. Box 7784, Johannesburg. (ESB/30883/57.)

OFFICIAL NOTICE

NIGERIAN RAILWAY CORPORATION

SENIOR DRAUGHTSMAN (TRACK)

THE Nigerian Railway Corporation invites applications for the above post.

DUTIES—The officer will be employed in the design and preparation of working drawings for track layouts and detailing, railway installations, minor structures and drainage schemes.

QUALIFICATIONS—Candidates must have experience in the New Works or Permanent Way Section of a first-class railway or with a manufacturing firm which supplies railway components. The ability to prepare Bills of Quantities for general civil engineering would be an advantage.

SALARY—In scale £1,150 × £50 per annum to £1,450 per annum plus £300 per annum overseas pay. Appointments are on contract with 20 per cent gratuity per annum of total pay.

TOURS—15 months in Nigeria followed by 15 weeks' leave on full pay.

QUARTERS—Partly furnished quarters are provided at low rental.

ALLOWANCES—There are attractive family, travelling, transport and other allowances.

Send postcard before January 15, 1958, mentioning the post and this paper for further particulars and application form to:

The London Representative, Nigerian Railway Corporation, Nigeria House, 9 Northumberland Avenue, London, W.C.2.

'I carried a thousand tons of your coal last night!'

THAT's the average load for a British Railways coal train. This means 300,000 wagon loads, or 18 million wagon miles every week. In a year they carry 170 million tons between them to fireplaces and furnaces all over Britain. Good going? All in a day's work for British Railways. Or rather all in a night's work.

From cows to crude oil

There is nothing British Railways cannot transport; and everything is dealt with as a separate problem. For bicycles, chemicals, furniture there are special facilities: for perishable goods, highly insulated containers—the most efficient of their kind in Britain. If you have some special requirements for transporting liquid in bulk, your own tank equipment can be constructed.

Near-express speeds at night

Most of the freight work is done at night when the lines are quieter. And more and more freight trains are now being fitted with vacuum brakes. Not only does this make for greater safety, it also means the trains can run at near-express speeds, and so increase line capacity and improve punctuality. Whatever your product—milk, beer, coal, fruit, meat, livestock—whatever your problem, you can rest assured that British Railways will give you excellent advice and first class service. Just get in touch with your local Station Master or Goods Agent and your transport difficulties are over.

GREEN ARROW SERVICE Operating for both overseas and certain home freights, this service enables you to register consignments all the way to the destination station or port for only 2/6d. Ask your local Station Master or Goods Agent for full details.

The operator in the Control Tower is in contact with drivers in the marshalling yard by means of short-wave radio. He directs the wagons into their correct sidings.

Shown above is an FM type of insulated meat container. It has the great advantage of door-to-door transit without any handling of the goods.

BRITISH RAILWAYS

SOCIAL AND PERSONAL

B.T.C. Appointments

A NUMBER of headquarters appointments to the staffs of the British Transport Commission and British Railways was announced last week. They are:

General Staff of the Commission

Manpower adviser's department, training and education division: Mr. J. C. L. Palmer, senior executive assistant, recruitment and training officer's department, London Transport Executive, to be education officer; Mr. E. H. Hopper, assistant (training and education), B.T.C., to be training officer.

Central Services of the Commission

Contracts department: Mr. F. G. Manning, assistant director, general matters, funds and general division, finance department, to be contracts officer.

British Railways Central Staff

Mechanical engineering department: Mr. H. L. Butler, technical assistant, to be assistant mechanical engineer.

* * *

Mr. S. C. Bond, M.Inst.T., for the past 17 years transport and general shipping manager of the Stanton Ironworks Co., Limited, and of its subsidiary companies, has been appointed controller of

Mr. S. C. Bond

transport for the whole of the Stewarts and Lloyds group (including Stanton). Mr. Bond will be responsible for all the rail, road and shipping interests of the group. Mr. Bond has been president of the Traders Road Transport Association for the past four years and is chairman of the National Road Transport Federation. He is also chairman of the transport standing sub-committee of the British Iron and Steel Federation, and a member of the Traders Co-ordinating Committee on Transport, on which body he represents the British Coking Industry Association and the Council of Ironfoundry Associations. For many years he has played a leading part in the transport affairs of the iron and steel industry, and is a prominent figure in matters relating to road transport. Mr. Bond took up his new duties in London on January 1.

* * *

Formerly secretary, Mr. G. R. Curry has been appointed director of the Locomotive and Allied Manufacturers' Association.

* * *

We record with regret the death of Mr. P. R. Privett, O.B.E., a former director of the General Steam Navigation Co., Limited.

* * *

Mr. John Donovan has retired as a member of the management board of British Transport Docks, but his services will be available if required until March 31.

* * *

We record with regret the death, at the age of 73, of Mr. R. D. Brown, former chief engineer to the Manchester Ship Canal Company. Mr. Brown retired from the company in 1949 after 27 years' service. He was appointed chief engineer in 1945.

* * *

Vickers, Limited, announces that Mr. A. H. Hird, A.C.G.I., B.Sc., M.I.Mech.E., has been appointed to the board. He is a director of Vickers-Armstrongs, Limited, and Metropolitan-Cammell Carriage and Wagon Co., Limited, and chairman of several wholly owned subsidiaries of Vickers.

* * *

Mr. F. E. Sheppard, B.Sc.(Eng.), A.M.I.Mech.E., M.I.Loco.E., has been appointed to the new post of group sales manager (railways) in the John Bull group of companies, which includes Metalastik, Limited. He will be responsible for sales of railway rolling stock and permanent way components and assemblies.

* * *

The Minister of Supply, with the agreement of the Secretary of State for War, has appointed Colonel R. H. Bright to be Director of Inspection of Fighting Vehicles in succession to the late Brigadier W. S. King. On taking up duty Colonel Bright will be granted the temporary rank of brigadier.

* * *

Mr. M. Vignon, who is retiring from his position as agent-general of the French Government Tourist Office in London, was presented with a small token of esteem at Victoria on December 31 by Mr. R. E. Sinfield, shipping and Continental manager, Southern Region. He was supported by Sir John Elliot and Messrs. R. H. Hacker, C. P. Hopkins, H. J. Bourn and F. D. Y. Faulkner.

* * *

Mr. W. Dunsmuir, M.I.Loco.E., assistant motive power superintendent, Scottish Region, B.R., retired last month, having completed 50 years' service. He joined the locomotive department of the Caledonian Railway in 1907 at Polmadie. He was appointed district motive power superintendent, Burntisland, in 1949, and in the same position for Glasgow (North) a year later, before taking up the above position in 1951.

* * *

The service of carols held in the Great Hall of Euston Station, London, on the eve of Christmas, is an event possibly unique in the world, but certainly keenly anticipated. This year the choir of members of the staff of the London Midland Region of British Railways sang 13 carols on the evening of December 23. They were introduced by the Rev. W. P. Baddeley, vicar of St. Pancras, who welcomed the hearers on behalf of Lord Rusholme, chairman of the area board, and Mr. David Blee, the L.M. general manager.

Transport Adviser to Unilever

FOLLOWING the announcement on November 5 that Mr. A. G. Marsden, transport adviser to the board of Unilever and head of transport division, arrives at retiring age in the very near future it has now been decided that he should relinquish his official appointment as from the end of 1957, but will be available for consultation until his retirement later this year. In order that all the necessary arrangements for the future can be put in hand as soon as possible Mr. E. G. Whitaker became transport adviser to the board of Unilever and head of transport division on January 1. (A portrait and biography of Mr. Marsden appear on page 9 and editorial notice on page 1.)

* * *

We regret to record the death of Mr. George William Davis, proprietor of City Coaches, Rochester, Kent.

* * *

We record with regret the death, at the age of 61, of Mr. J. McGregor, managing director, Key Warehousing and Transport Co., Limited.

* * *

Mr. Charles F. Cleaver, M.I.C.E., M.I.Mech.E., M.I.Loco.E., has retired from the boards of A.C.V. Sales, Limited, and British United Traction, Limited.

* * *

With effect from December 31, Mr. L. W. S. Grinling has relinquished his executive duties as an assistant managing director of Coast Lines, Limited, but retains a seat on the board.

* * *

On January 21, at 7.30 p.m. the Transportation Club is holding a club dinner (dress informal) at its premises in 44 Wilton Crescent, London, S.W.1. Guest of honour will be General Sir Nevil Brownjohn, Quartermaster General to the Forces.

* * *

Admiral Sir Denis Boyd in December relinquished the position of principal at Ashridge in which he had become well known to many hundreds of Institute of Transport members through weekend courses in transport. We understand the weekend courses are now in the balance.

* * *

Mr. J. F. Pretlove has been appointed sales director of Harris and Marsh, Limited, road transport contractors, of Beckenham, Kent; this is an unusual but quite appropriate designation in the road haulage industry. A former assistant secretary of the Kent County Cricket Club he is a Cambridge triple blue.

* * *

Mr. R. Arbuthnott, M.B.E., has been nominated by the council of the Institution of Locomotive Engineers for the presidency in the 1958-59 session, with Messrs. D. C. Brown and S. B. Warder as new vice-presidents. Members nominated to the council are: Messrs. H. H. C. Barton, M. G. Burrows, G. Collingwood, A. W. J. Dymond, A. H. Emerson, R. Harvey and E. D. Trask.

* * *

A memorial service was held on December 30 at the restored church of St. Bride's, Fleet Street, for Mr. William Henry Parrack, chairman of Odhams (Watford), Limited, printer of MODERN TRANSPORT. It was conducted by the rector, the Rev. Cyril M. Armitage and was attended by his family, directors, officers and staff of the Odhams group of companies, representatives of the newspaper and printing industries and a very large circle of friends.

Sir Henry Spurrier, chairman of Leyland Motors, Limited, recently unveiled a bronze plaque commemorating his father, Mr. Henry Spurrier, and naming the "Spurrier Works" the 104-acre Farington establishment, previously an M.o.S. tank factory

Mr. C. E. Jefferson, vice-president of traffic for the Canadian Pacific Railway, retired on December 31 and is succeeded by Mr. George F. Buckingham, general traffic manager.

* * *

The British Transport Commission announces the appointment of Mr. F. Donachy as a member of its Scottish Area Board. A member of the N.U.R. executive committee, and president of the general council of the Scottish T.U.C. in 1956-57, Mr. Donachy is a member of the Transport Users' Consultative Committee for Scotland.

* * *

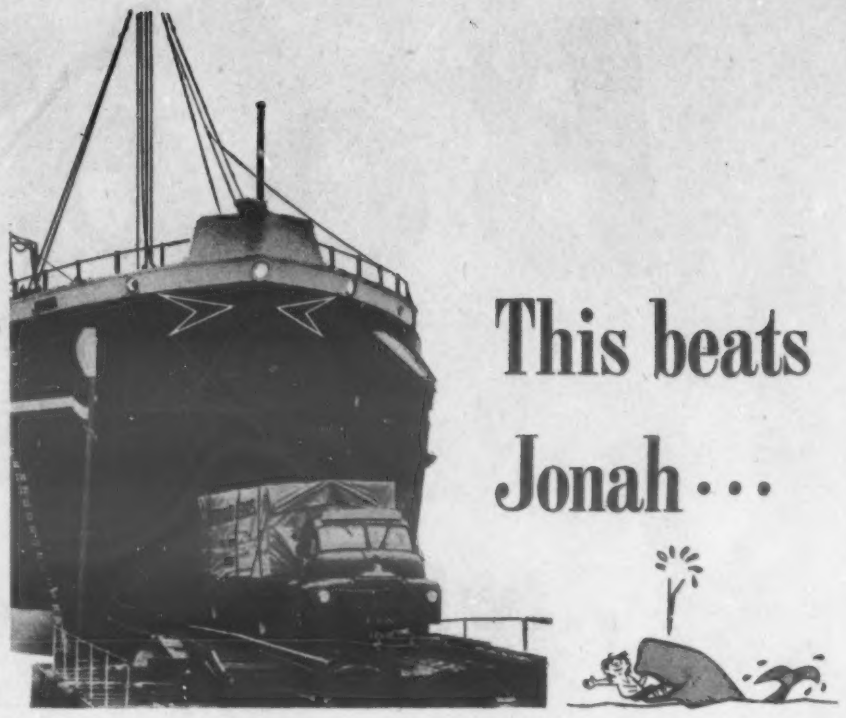
Four new appointments are announced by Guy Motors, Limited. The general sales manager, Mr. W. L. Drummond, and export sales manager, Mr. G. E. Harris, are appointed to the board of Guy Motors as are the works manager, Mr. C. W. McDonald, and secretary, Mr. S. L. Hollis, who become local directors.

* * *

Mr. A. Philip has been appointed assistant regional establishment and staff officer, Scottish Region, B.R. He joined the London and North Eastern Railway at Aberdeen in 1927, in 1951 was appointed staff assistant to the operating superintendent, Scottish Region, and in 1955 became district operating superintendent, Glasgow (North), the position now vacated.

* * *

We regret to record the death of Mr. F. G. Woollard who, as general manager of the engines branch of Morris Motors, Limited, introduced the first automatic transfer machines for this Coventry factory in the period 1923-25. He was thereafter recognised as a leading authority on flow production and was a former president of the Institution of Automobile Engineers, playing a leading role in its merger into the Institution of Mechanical Engineers. Mr. Woollard was 74.



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...with Bedford's own diesel

pay you extra dividends every mile

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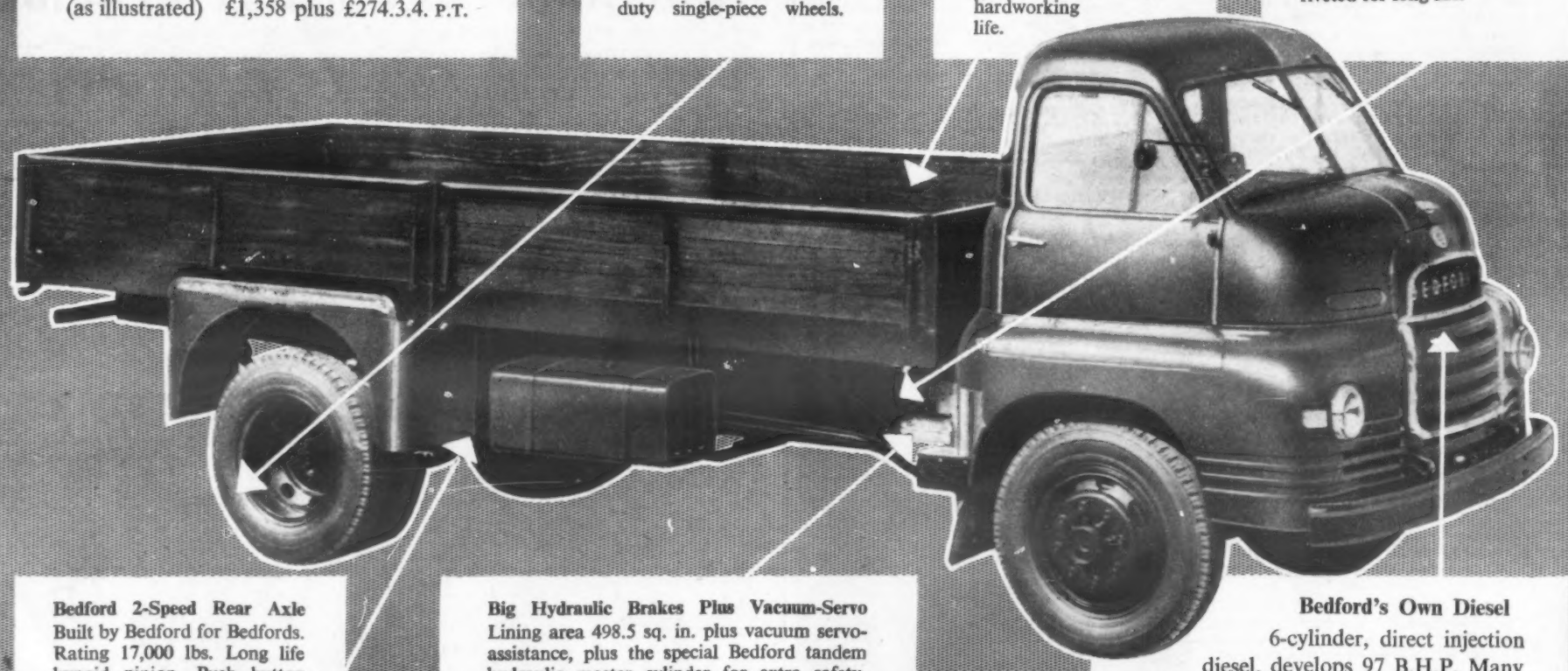
16ft. dropside truck
(as illustrated) £1,358 plus £274.3.4. P.T.

Tubeless Tyre Option
8.25—20, 12-ply tyres. G.V.W. 10 tons 5¼ cwt. Tubeless tyres optional at no extra cost with heavy duty single-piece wheels.

Long Life Body and Chassis
16ft. dropside body mounted on a rugged 7-ton chassis equipped throughout for a long, hardworking life.

Extra Rugged Frame
9.9 inches deep. High section modulus to withstand heavy impact loads. Cold squeeze riveted for long life.



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